TOA

**OPERATING INSTRUCTIONS**

# 9000 SERIES AMPLIFIER

# M-9000
# A-9060DH
# A-9120DH

Thank you for purchasing TOA's 9000 series Amplifier.
Please carefully follow the instructions in this manual to ensure long, trouble-free use of your equipment.

TOA Corporation

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# 1. IMPORTANT SAFETY INSTRUCTIONS

- Read these instructions.
- Keep these instructions.
- Heed all warnings.
- Follow all instructions.
- Do not use this apparatus near water.
- Clean only with dry cloth.
- Do not block any ventilation openings. Install in accordance with the manufacture's instructions.
- Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
- Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
- Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
- Only use attachments/accessories specified by the manufacturer.
- Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.

- Unplug this apparatus during lightning storms or when unused for long periods of time.
- Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

## FCC REQUIREMENTS

**Note:** This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

# 2. SAFETY PRECAUTIONS

- Before installation or use, be sure to carefully read all the instructions in this section for correct and safe operation.
- Be sure to follow all the precautionary instructions in this section, which contain important warnings and/or cautions regarding safety.
- After reading, keep this manual handy for future reference.

## Safety Symbol and Message Conventions

Safety symbols and messages described below are used in this manual to prevent bodily injury and property damage which could result from mishandling. Before operating your product, read this manual first and understand the safety symbols and messages so you are thoroughly aware of the potential safety hazards.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operation and maintenance (servicing) instruction in the literature accompanying the appliance.

**⚠ WARNING** Indicates a potentially hazardous situation which, if mishandled, could result in death or serious personal injury.

**When Installing the Unit**

- Do not expose the unit to rain or an environment where it may be splashed by water or other liquids, as doing so may result in fire or electric shock.
- Use the unit only with the voltage specified on the unit. Using a voltage higher than that which is specified may result in fire or electric shock.
- Do not cut, kink, otherwise damage nor modify the power supply cord. In addition, avoid using the power cord in close proximity to heaters, and never place heavy objects -- including the unit itself -- on the power cord, as doing so may result in fire or electric shock.
- Avoid installing or mounting the unit in unstable locations, such as on a rickety table or a slanted surface. Doing so may result in the unit falling down and causing personal injury and/or property damage.
- External wiring connected to the terminals marked with ϟ requires installation by an instructed person.
- The apparatus shall be connected to a mains socket outlet with a protective earthing connection.
- The socket-outlet shall be installed near the equipment and the plug shall be easily accessible.
- Use the supplied rack mounting bracket when mounting the unit in an equipment rack. Remove four M4 x 8 screws on both sides of the unit, and mount the bracket there using the supplied M4 x 16 screws instead.

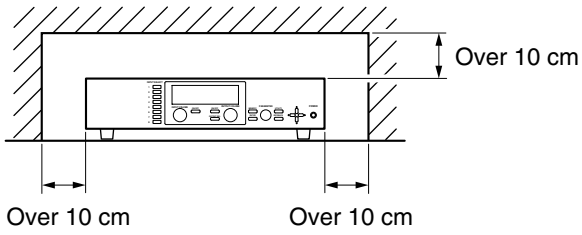
**When the Unit is in Use**

- Should the following irregularity be found during use, immediately switch off the power, disconnect the power supply plug from the AC outlet and contact your nearest TOA dealer. Make no further attempt to operate the unit in this condition as this may cause fire or electric shock.
  - If you detect smoke or a strange smell coming from the unit
  - If water or any metallic object gets into the unit
  - If the unit falls, or the unit case breaks
  - If the power supply cord is damaged (exposure of the core, disconnection, etc.)
  - If it is malfunctioning (no tone sounds.)
- To prevent a fire or electric shock, never open nor remove the unit case as there are high voltage components inside the unit. Refer all servicing to your nearest TOA dealer.
- Do not place cups, bowls, or other containers of liquid or metallic objects on top of the unit. If they accidentally spill into the unit, this may cause a fire or electric shock.

**⚠ CAUTION** Indicates a potentially hazardous situation which, if mishandled, could result in moderate or minor personal injury, and/or property damage.

**When Installing the Unit**

- Never plug in nor remove the power supply plug with wet hands, as doing so may cause electric shock.
- When unplugging the power supply cord, be sure to grasp the power supply plug; never pull on the cord itself. Operating the unit with a damaged power supply cord may cause a fire or electric shock.
- Do not block the ventilation slots in the unit's cover. Doing so may cause heat to build up inside the unit and result in fire.
- Avoid installing the unit in humid or dusty locations, in locations exposed to the direct sunlight, near the heaters, or in locations generating sooty smoke or steam as doing otherwise may result in fire or electric shock.
- To avoid electric shocks, be sure to switch off the unit's power when connecting speakers.
- Be sure to follow the instructions below when rack-mounting the unit. Failure to do so may cause a fire or personal injury.
  - · Install the equipment rack on a stable, hard floor. Fix it with anchor bolts or take other arrangements to prevent it from falling down.
  - · When connecting the unit's power cord to an AC outlet, use the AC outlet with current capacity allowable to the unit.
- Keep the 9000 series amplifiers over 10 cm away from objects that may obstruct air flow to prevent the unit's internal temperature rise.




**When the Unit is in Use**

- Do not operate the unit for an extended period of time with the sound distorting. This is an indication of a malfunction, which in turn can cause heat to generate and result in a fire.
- Switch off the power, and unplug the power supply plug from the AC outlet for safety purposes when cleaning or leaving the unit unused for 10 days or more. Doing otherwise may cause a fire or electric shock.

An all-pole mains switch with a contact separation of at least 3 mm in each pole shall be incorporated in the electrical installation of the building.

The lighting flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

## ⚠ ATTENTION

L'appareil ne doit pas être exposé aux éclaboussures ou écoulements et tous objets remplis de liquide, tels que vases, ne doivent pas être sur l'appareil.

# 3. GENERAL DESCRIPTION

TOA's M-9000 Matrix Mixer is designed to be used in conjunction with optional modules and can be configured for up to 8 inputs and 8 outputs. Usable modules include 4 types of 9000 series plug-in modules, D-001T (for 2 channels of input), T-001T (for output expansion), C-001T (for remote control), and ZP-001T (for zone paging), as well as 900 series input modules. The most appropriate modules can be selected depending on applications.

By changing operation mode, the M-9000 Mixer can be used either as a matrix system suited to BGM or paging broadcasts, or as a mixer that is appropriate for speech or sound reinforcement applications. It is equipped with signal processing and control functions, permitting all parameters to be set at the mixer. Further, settings data can be stored inside the mixer and called up using the keys on the front panel.

The 9000 Series A-9060DH and A-9120DH Amplifiers feature the M-9000's matrix mixer function and come with two 60 W and two 120 W power amplifiers, respectively. Both amplifiers can individually perform multi-channel broadcasts.

# 4. FEATURES

- Either matrix or mixer*1 mode can be selected depending on application for optimum operation.
- Matrix mode for BGM broadcasts or paging to zoned areas can be selected.
- A mixer mode*1 can be used for speech or sound reinforcement in such applications as hotel meeting rooms, churches or conference rooms.
- Eight module slots enable audio input and output configuration ranging from 1 input and 2 outputs to 8 inputs and 8 outputs.
- All settings can be performed at the unit using the built-in vacuum fluorescent display (VFD), setting keys and Parameter setting knob on the front panel.
- Up to 32 settings can be stored as Event memory (in matrix mode) or as Scene memory (in mixer mode*1), which can be recalled by the unit or external connected equipment.
- An RS-232C port permits remote control of the unit using an AMX*2 or Crestron*3 controller, or similar external equipment.
- A key lock function prevents accidental changes of front panel key or knob operation.
- Volume adjustment, paging initiation, and BGM program selection can be easily remote-controlled. The optional C-001T module permits the number of control inputs and outputs to be increased.
- Individual zones can be paged by a PABX (extension telephone) with the use of the optional ZP-001T module.
- A ducker function*4 permits paging calls to be made without interrupting BGM broadcasts when in matrix mode.
- Because an auto-mixing function (ducker function*4 and NOM attenuation function*5) is available when in mixer mode*1, the input signal volume can be automatically adjusted.

*1 Current firmware is not equipped with the mixer mode. It will be added when the firmware version is upgraded in the near future. For details, please contact your nearest TOA dealer.

*2 AMX is a trademark of AMX Corporation.

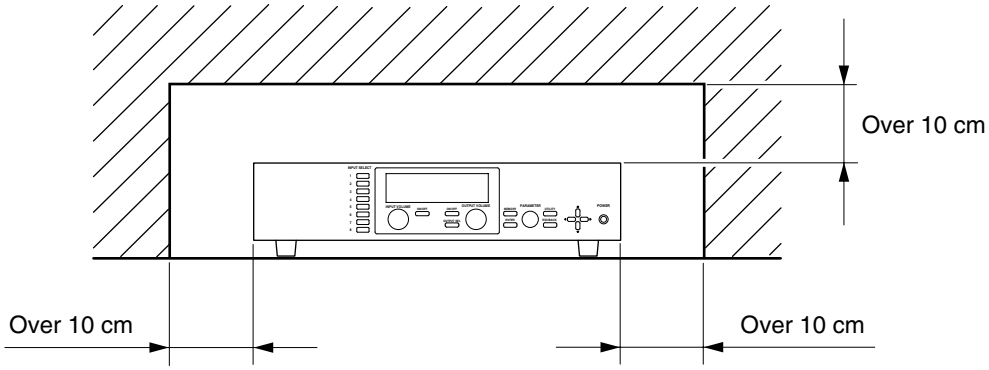
*3 Crestron is a trademark of Crestron Electronics, Inc.

*4 When a received signal exceeds the gate threshold level, the ducker function automatically attenuates all other input signals which are lower than that input channel in priority.

*5 The NOM (Number of Open Microphones) attenuation function automatically adjusts the open microphone's input channel gain depending on the number of open microphones.

## 5. INSTALLATION PRECAUTIONS

• Keep the A-9060DH and A-9120DH amplifiers over 10 cm away from objects that may obstruct air flow to prevent the unit's internal temperature rise.




## 6. HANDLING PRECAUTIONS

• The supplied power supply cord is designed for exclusive use with this unit. Never use it with other equipment.

• Use the unit in locations where the temperature is between –10 and +40 °C (no condensation should be formed), and the humidity is less than 80%.

• The unit is a precision audio component. To prevent failure, avoid locations where it may be exposed to strong shocks or vibrations.

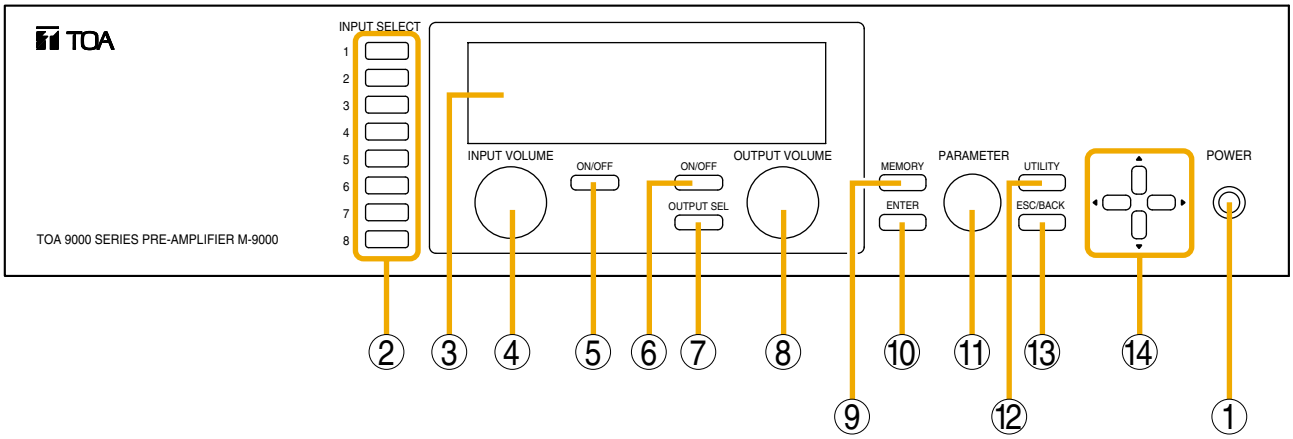
• To clean, be sure to first disconnect the power supply plug from the AC outlet, then wipe with a dry cloth. When extremely dirty, use a soft cloth dampened in neutral detergent. Never use benzene, thinner or chemically-treated towels, which may damage the unit's finish.

# 7. NOMENCLATURE AND FUNCTIONS

## 7.1. M-9000, A-9060DH, A-9120DH

### [Front]

This figure represents the M-9000.




**1. Power switch and Power indicator**
Press this switch to turn on the power. The power indicator lights. To turn off the power, hold down the switch for at least 0.5 second.

**Note**
The power switch is a soft-switch, so the internal microcomputer is still operating even when the power switch is set to OFF.

**2. Input channel selection keys**
Select the input channel for which the volume is adjusted or parameter is set.
Pressing the key causes the corresponding red channel indicator to light on the vacuum fluorescent display (VFD).

**3. Vacuum fluorescent display (VFD)**
Displays the setting screen, input and output selection status, channel ON/OFF status, input and output level meter indication, and fader position.
(Refer to p. 11 "VFD on-screen indications.")

**4. Input volume encoder**
Adjusts the gain of the input channel selected with the input channel selection key (2).

**5. Input channel ON/OFF key**
Turns on or off the channel selected with the input channel selection key (2).

**6. Output channel ON/OFF key**
Turns on or off the channel selected with the output channel selection key (7).

**7. Output channel selection key**
Selects the output channel for which the volume is adjusted or parameter is set. The output channel indicators on the VFD light in sequence each time the key is pressed.

**8. Output volume encoder**
Adjusts the gain of the output channel selected with the output channel selection key (7).

**9. Memory key**
Used to recall stored broadcast patterns or broadcast the selected input or output.

**10. Enter key**
Press this key when such indications as "OK?" are displayed.

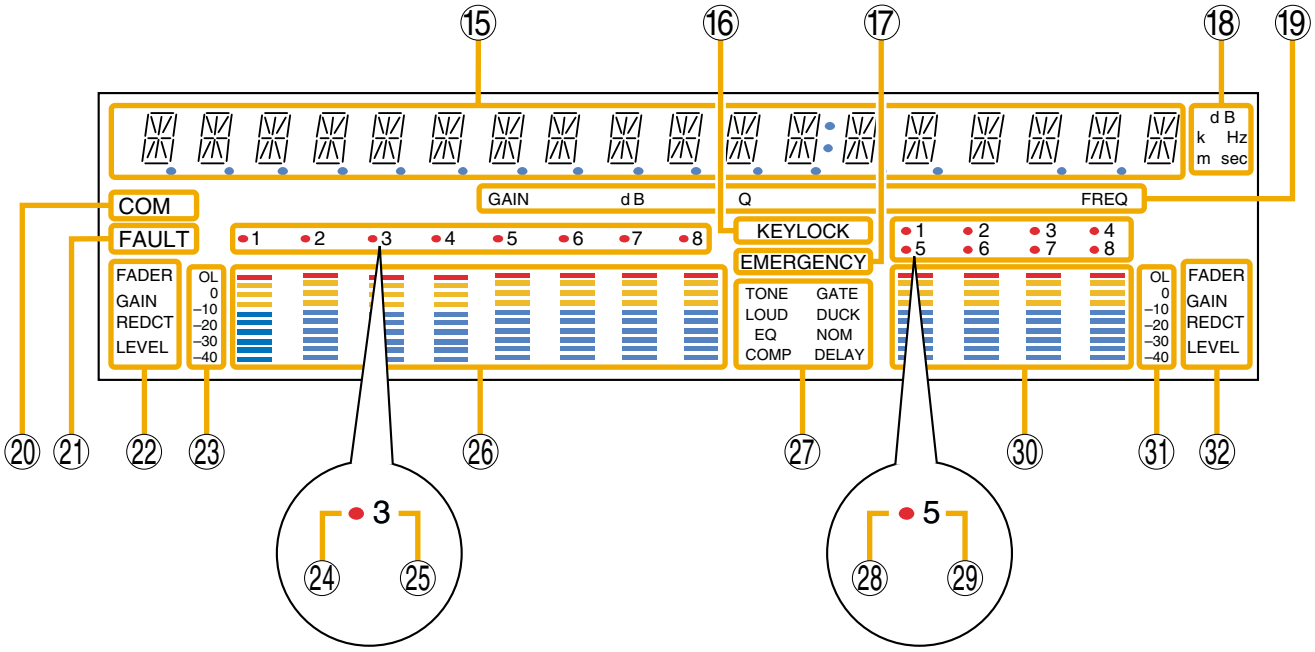
**11. Parameter setting knob**
Rotate this knob to select the setting item or setting contents.

**12. Utility menu key**
Holding down this key for 2 seconds or more when in normal operation mode switches the display to the setting screen.

**13. Escape/Back key**
Used to revert back to a previous screen when advanced with the Enter key during setting operation.

**14. Screen shift keys [ ▲▼◀▶ ]**
Move the setting screen or setting item.

## [VFD on-screen indications]




**15. 14-Segment,18-digit alphanumeric display**
Displays the corresponding setting screen or data when each function key is pressed. Parameters being edited flash.

**16. Keylock indicator**
Lights when the key lock function is enabled, and flashes while the key lock function is being edited.

**17. Emergency indicator**
Lights when the control input set for "Emergency mute" becomes active.

**18. Unit indicator**
Displays the unit of each parameter when it is set.

**19. GAIN, dB, Q, FREQ indicators**
Lights when the equalizer is adjusted.

**20. COM indicator**
Remains lit during communications via the RS-232C interface.

**21. Fault indicator**
Lights when the unit's failure or other abnormal conditions are detected.

**22. Input meter status indicator**
Indicates if the currently displayed input meter status is that of the input level (LEVEL) or input fader position (FADER).

**Note:** Input level is displayed only when the D-001T module is used.

**23. Input level indication**
Scale of levels (in dB) for the input meter.

**24. Input channel selection indicator (red dot)**
Lights when the corresponding input channel is selected, and flashes while parameters are being edited.

**25. Input channel ON/OFF indicator (channel number)**
Lights when the corresponding input channel is on (i.e. in operation mode), and flashes when off. The indicator remains extinguished during signal muting.

**26. Input meter**
Indicates the signal level or input fader position of each input channel. Which the meter is indicating is displayed on the input meter status indicator (22).

**Note:** Input level is displayed only when the D-001T module is used.

**27. Effect indicator**
Lights when effect is on, and flashes while the parameters are being edited.

**28. Output channel selection indicator**
Lights when the corresponding output channel is selected, and flashes while parameters are being edited.

**29. Output channel ON/OFF indicator (red dot)**
Lights when the corresponding output is on (i.e. in operation mode), and flashes when off.

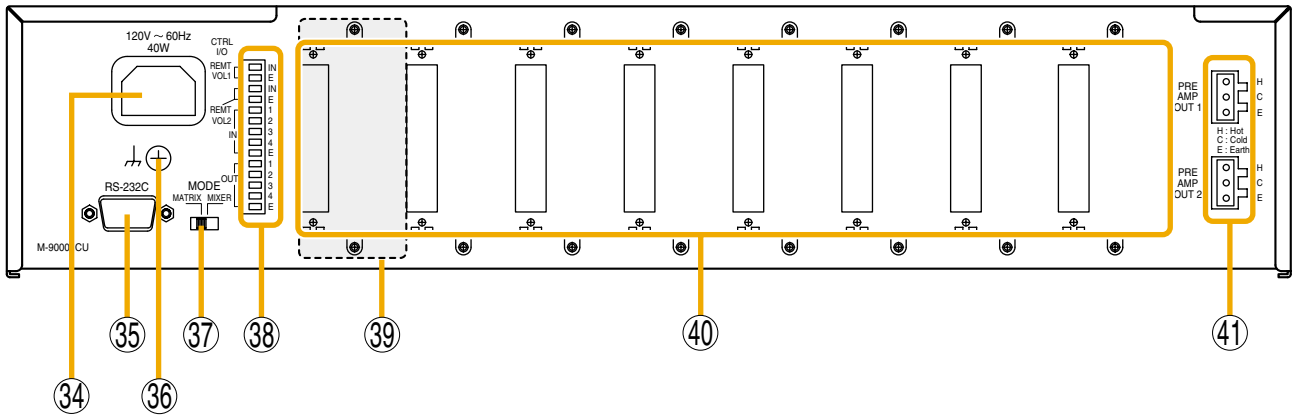
**30. Output meter**
Indicates the signal level or output fader position of each output channel. Which the meter is indicating is displayed on the output meter status indicator (32).

**31. Output level indication**
Scale of levels (in dB) for the output meter.

**32. Output meter status indicator**
Indicates if the currently displayed output meter status is that of the output level (LEVEL) or output fader position (FADER).

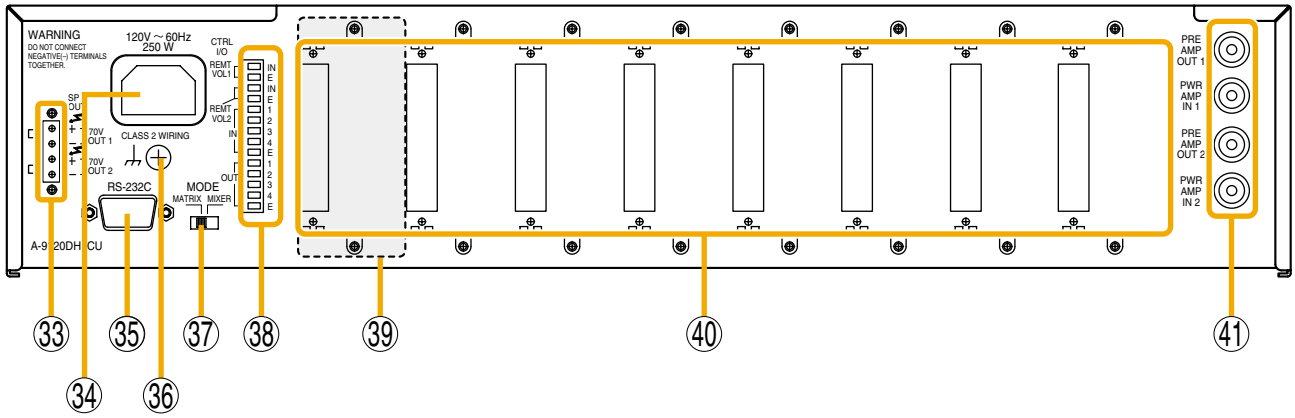
## [Rear]

• **M-9000**




• **A-9060DH, A-9120DH**

This figure represents the A-9120DH.




**33. Speaker output terminal**
Connects the 70 V high-impedance speaker.

**34. AC inlet**
Connects to the supplied power cord.

**35. RS-232C serial communication port**
Connector for communications with a personal computer or control equipment.

**36. Functional earth terminal**
Hum noise may be generated when external equipment is connected to the unit. Connecting this terminal to the functional earth terminal of the external equipment may reduce the hum noise.

**Note:** This terminal is not for protective earth.

**37. Mode switch**
Selects the unit's operation mode (either matrix or mixer).

**Note:** Only the matrix mode is currently available.

**38. Control-I/O connection terminal**
Connect a 10 kΩ (linear taper) variable resistor to the remote volume control terminals (REMT VOL 1 and 2) or input the DC voltage of 0 to +10 V when remotely adjusting the volume.

Input and output terminals (IN and OUT) are used to change the unit's internal status or output internal status data to external equipment after having received various control signals.

**39. Blank panel (accessory)**
Attach the blank panels to open slots.

**40. Module slots**
900 Series or 9000 Series modules can be inserted into these slots.
(Refer to p. 50 "MODULE INSTALLATION")

**41. Preamplifier output and Power amplifier input terminals**

[M-9000 Matrix mixer]
There are 2 preamplifier output terminals.
0 dB, 600 Ω, balanced type

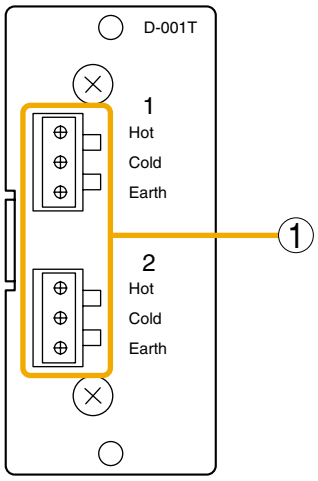
[A-9060DH and A-9120DH Amplifiers]
There are 2 preamplifier output terminals and 2 power amplifier input terminals.
Connecting a plug to the power amplifier input terminal internally disconnects the preamplifier section from the power amplifier section.
Both terminals: 0 dB, 300 Ω, unbalanced type

## 7.2. Optional Modules

### 7.2.1. D-001T (2-channel input module)

The D-001T module is designed for use with the 9000 Series amplifiers.
Up to 4 modules (8 channels in total) can be inserted into the amplifier.
The module can handle signals ranging from microphone level (–60 dB) to line level (–10 dB), and can control their input sensitivity in 9 levels.
Phantom power (24 V) can be supplied for microphone level (–60 dB to –30 dB) signals.
The D-001T module has an internal digital signal processor that can process input signals.

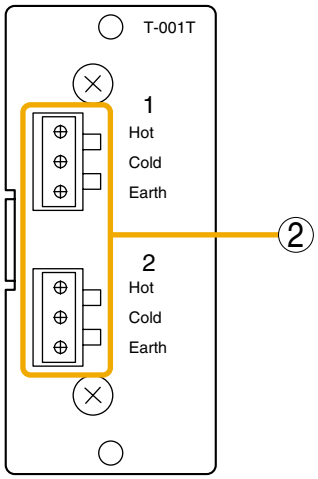
The D-001T module is required to use a VOX (Voice-Operated Switch) function and input channel level meter.




**1. Monaural input terminals [1, 2]**
Electronically-balanced 3P removable terminal blocks.
Input level: –60 dB to –10 dB selectable.
Input impedance is 10 kΩ when the phantom power is OFF, and 3 kΩ when ON.

### 7.2.2. T-001T (Audio output expansion module)

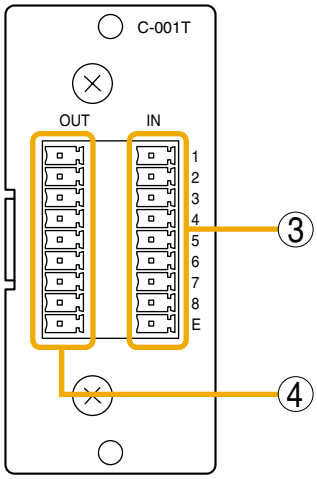
The T-001T module is designed for use with the 9000 Series amplifiers and can expand 2 output channels per module.
Since the main unit has 2 fixed outputs, the audio output can be expanded to 8 channels by using a maximum of 3 modules (6 channels).




**2. Monaural output terminals [1, 2]**
Electronically-balanced 3P removable terminal blocks.
Output level: 0 dB
Output impedance: 600 Ω

### 7.2.3. C-001T (Control I/O expansion module)

The C-001T module is designed for use with the 9000 Series amplifiers and can provide up to 8 channels each of input and output expansion.
Since the main unit has 4 fixed inputs and outputs each, the control input and output can be expanded to up to 12 channels each when the C-001T module is used.



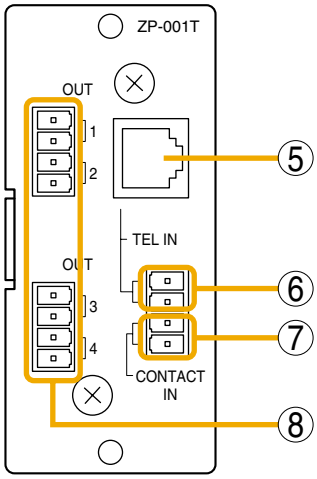

**3. Contact input terminal [IN 1, 2, 3, 4, 5, 6, 7, 8, E]**
9-pin removable terminal block, 8-circuit contact input terminal.
Individual contact functions are assigned on the front panel setting screen of the main unit.

**4. Contact output terminal [OUT 1, 2, 3, 4, 5, 6, 7, 8, E]**
9-pin removable terminal block, 8-circuit contact output terminal.
Individual contact functions are assigned on the front panel setting screen of the main unit.

### 7.2.4. ZP-001T (Zone paging module)

The ZP-001T is designed for use with the 9000 Series amplifiers and functions as an interface to connect the 9000 Series amplifiers to an analog PABX, allowing zone paging to be initiated from the PABX.

There are two operation modes: ring signal and paging trunk modes. Select one of the two modes when using this module.




**5. Telephone input terminal [TEL IN] (Modular jack)**
Interface connector for an analog PABX.
Connect a PABX to this terminal when using the module in the ring signal mode.

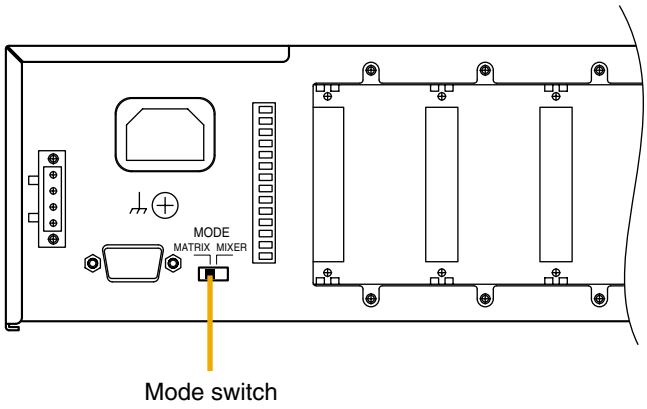
**6. Telephone input terminal [TEL IN]**
4-pin removable terminal block, 2 pins are used for this input.
This terminal is internally connected in parallel with the telephone input terminal (modular jack) (5).
Connect a PABX to this terminal when the paging trunk is used (paging trunk mode).

**7. Contact input terminal [CONTACT IN]**
4-pin removable terminal block, 2 pins are used for this input.
Connect the contact output from a PABX to this terminal.

**8. Contact output terminals [OUT 1, 2, 3, 4]**
4-pin removable terminal blocks, contact output terminals.
This terminal is not used with the current firmware. It will be made usable in the near future when the firmware version is upgraded.
For details, please contact your nearest TOA dealer.

# 8. OPERATION MODE

Two operation modes are made available to the unit: matrix mode and mixer mode.
Be sure to select one of the two modes by means of the Mode switch on the rear panel before using the unit.




Mixer mode is not used with the current firmware. It will be made usable in the near future when the firmware version is upgraded.
For details, please contact your nearest TOA dealer.

## Important

Be sure to disconnect the power supply plug from the AC outlet when changing the mode.
Since the changes in mode will erase all setting contents, download the set files that need to be stored using the supplied PC software.

## 8.1. Matrix Mode

Use the matrix mode when broadcasting BGM or paging calls to zoned areas in such facilities as civic centers, universities, schools, restaurants, bars, and cruise ships.
Input signals are basically not mixed but distributed in the matrix mode. Multiple audio input signals can be simultaneously routed to multiple outputs and in addition, paging calls assigned different priority levels can be initiated during BGM broadcast to each zone.
The ducker function*1 also allows paging calls to be made without interrupting BGM broadcasts to each zone.
A maximum of 32 settings related to broadcasts, such as broadcast sound source input channels, interrupt broadcast output channels, BGM source input channels, and broadcast start methods, can be stored as Event memory.

## 8.2. Mixer Mode

This mode is suitable for speech and sound reinforcement applications in the hotel meeting rooms, churches, and conference rooms.
Input signals are mixed in the mixer mode, and the operator can make fine adjustments to signal mixing in real time while actually monitoring sound output.
Up to 32 sound adjustments made depending on the usage environment or scene can be stored as Scene memory and recalled. Further, the input signal sound volume can be automatically adjusted using an auto-mixing function (ducker function*1 and NOM attenuation function*2).

*1 When a received signal exceeds the gate threshold level, the ducker function automatically attenuates all other input signals which are lower than that input channel in priority.

*2 The NOM (Number of Open Microphones) attenuation function automatically adjusts the open microphone's input channel gain depending on the number of open microphones.

# 9. OPERATION

To operate the unit in the matrix mode, make necessary settings in advance such as the audio input/output settings and event settings (including broadcast pattern and BGM broadcast group).

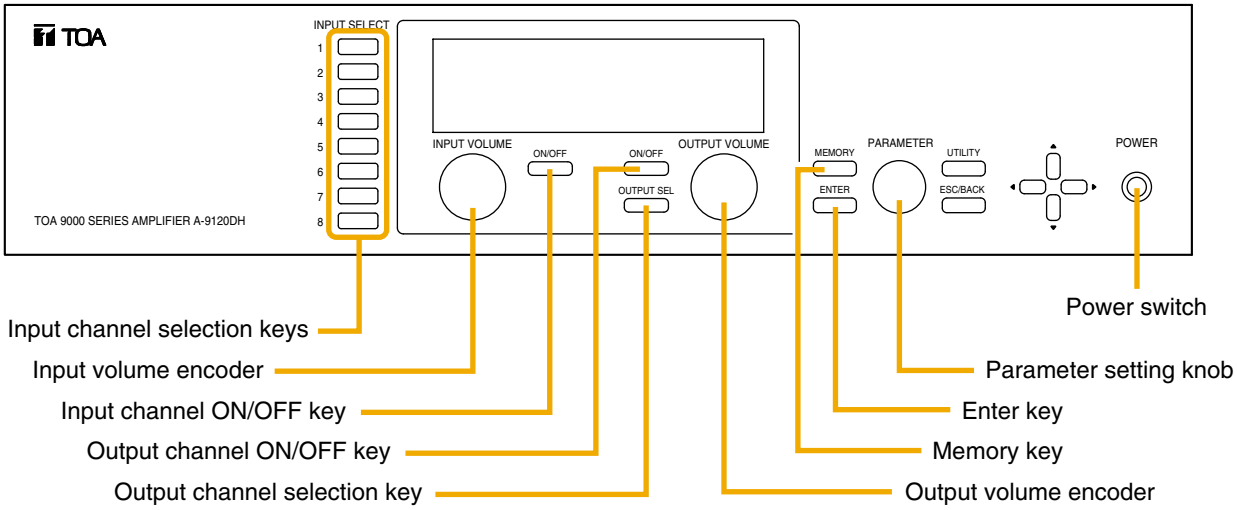
## 9.1. Normal Operation Mode

In the matrix mode, the unit need not be operated in normal conditions since the set broadcast patterns can be activated by means of remote control. However, it is also possible to adjust the volume or activate the broadcast patterns directly using the front panel-mounted keys and knobs.
This section describes operations that can be performed in normal operation state when the key lock function is disabled and the unit is set to the matrix mode.

### 9.1.1. Keys and knobs

**[Front]**

This figure represents the A-9120DH.




### 9.1.2. Power ON/OFF

Power is turned on when the power switch is pressed.
To turn off the power, hold down the power switch for 0.5 second or more.

### 9.1.3. Changing the input volume

**Step 1.** Press the Input channel selection key to choose the input channel for which you want to change the volume from those with the illuminated Input channel ON/OFF indicator (channel number).
The selected channel's selection indicator (red dot) lights.

**Step 2.** Adjust the volume using the input volume encoder.

**Tip**
Whether the changed volume is saved or not depends on the setting item "Memory erasure or storage" in the UTILITY setting on page 39.

### 9.1.4. Input channel ON/OFF

Input channels alternate between ON and OFF with each depression of the Input channel ON/OFF key.
The channel is ON when the input channel ON/OFF indicator (channel number) lights.

### 9.1.5. Changing the output volume

**Step 1.** Press the Output channel selection key to turn on the Output channel ON/OFF indicator (red dot) for the output channel for which the you want to change volume.
Channels to be selected will change each time the Output channel selection key is pressed.

**Step 2.** Adjust the volume using the output volume encoder.

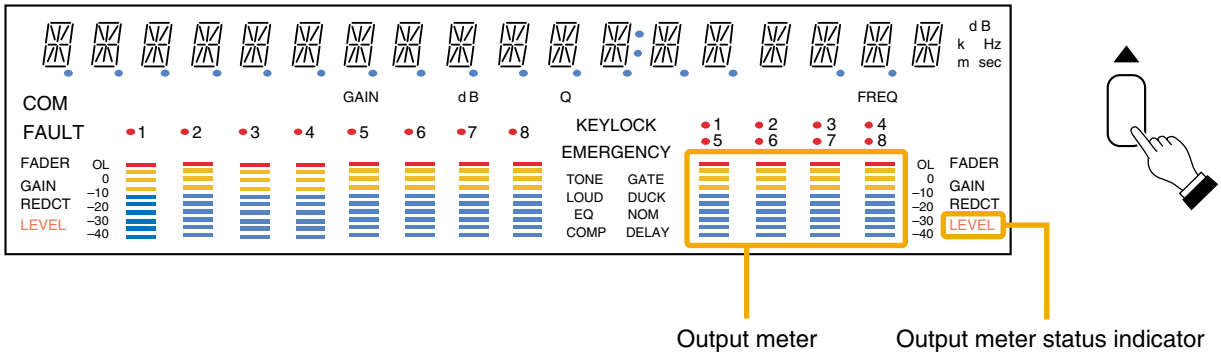
**Tip**
Whether the changed volume is saved or not depends on the setting item "Memory erasure or storage" in the UTILITY setting on page 39.

### 9.1.6. Output channel ON/OFF

Output channels alternate between ON and OFF with each depression of the Output channel ON/OFF key.
The channel is ON when the Output channel ON/OFF indicator (channel number) lights.

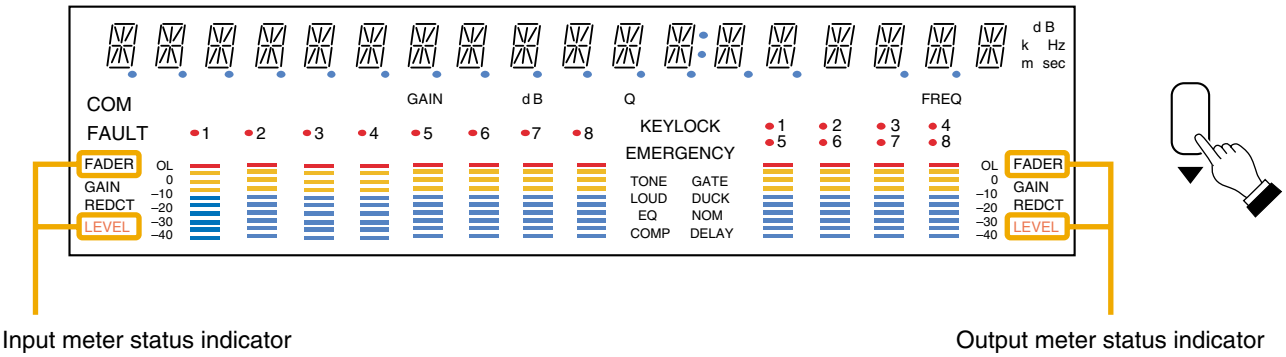
### 9.1.7. Changing the indicated channels on the output meter in LEVEL status

The output meter indicates the signal levels of only a set of 4 channels: CH 1 – 4 (factory-preset) or CH 5 – 8.
Pressing the Up shift key alternately switches the level indication between CH 1 – 4 and CH 5 – 8.
The LEVEL indicator of the output meter status indicator flashes while the CH 5 – 8 are indicated, and stays lit while the CH 1 – 4 are indicated.




### 9.1.8. Changing the input and output level meter display status

Pressing the Down shift key alternately switches the input and output meter display status between the signal level and the fader position.
The LEVEL indicators on both input and output meters light when the signal levels are indicated, while the FADER indicators light when the fader positions are indicated.




**Note:** The figure above is the VFD screen display when the input and output levels are indicated.

## 9.2. Zone Paging

This section describes the method of initiating zone paging from a PABX (extension telephone) using the ZP-001T Zone Paging Module. Note that the operation method differs depending on the ZP-001T's operation mode setting: paging trunk mode or ring signal mode.

### 9.2.1. Paging trunk mode

**Step 1.** Activate the paging trunk from the extension telephone.
Since this method differs depending on the type of exchange, please read the instruction manual for the extension telephone.
When the paging trunk is activated and the control input terminal is closed, the ZP-001T module connects the line.

**Step 2.** Select the output channel.
Press [0] first, followed by the output channel number ([1] – [8] or [9] when selecting all numbers simultaneously). Pressing the [#] key completes the output channel selection.

Example: To select Outputs 2 and 3, press [0] [2] [3] [#].
To make an all-zone call, press [0] [9] [#].

**Step 3.** Begin paging when a pre-paging tone is heard from the handset.
The pre-paging tone can be set to be transmitted to all the selected output channels as well.
(The pre-paging tone ON or OFF cannot be individually set for the selected output channels.)

**Step 4.** Deactivate the paging trunk to terminate paging.
Since this method differs depending on the type of exchange, please read the instruction manual for the extension telephone.

### 9.2.2. Ring signal mode

**Step 1.** Make a call from the extension telephone to the ZP-001T module.
After all call tone sounds twice, the ZP-001T receives the call and a callback tone is heard from the handset.

**Step 2.** Select the output channel.
Press [0] first, followed by the output channel number ([1] – [8] or [9] when selecting all numbers simultaneously). Pressing the [#] key completes the output channel selection.

Example: To select Outputs 2 and 3, press [0] [2] [3] [#].
To make an all-zone call, press [0] [9] [#].

**Step 3.** Begin paging when a pre-paging tone is heard from the handset.
The pre-paging tone can be set to be transmitted to all the selected output channels as well.
(The pre-paging tone ON or OFF cannot be individually set for the selected output channels.)

**Step 4.** To terminate paging, press [0] [0] [#] or replace the handset.

If dialing [0] [0] [#]: Pressing a first [0] terminates paging (a DTMF tone for the first [0] is output), and the ZP-001T disconnects the line after the [#] has been pressed.

If replacing the handset: After a signal tone is transmitted 3 times, the paging is terminated and the line disconnected.

## 9.3. Activating the Event or Making Paging Calls While Power Is OFF

The 9000 Series amplifiers are designed to initiate paging by way of the ZP-001T module or activate the Event even while the power is OFF*.

* The state that the front panel-mounted power switch is set to OFF position, while the power is still supplied to the unit from the AC inlet.

The unit operates as follows when the power is switched OFF:

- Events by control input (including the C-001T module) can be activated, but those using the VOX (Voice-Operated Switch) function cannot be activated.
- The unit returns to Power-OFF state after Event or paging completion.
- Broadcasts can be initiated from the ZP-001T regardless of whether the operation mode is set to Ring Signal or Paging Trunk.
- Broadcasts cannot be performed for 2 seconds during which the Event is activated and the power amplifier begins to operate.
- When the power is switched OFF while the Event is being activated by way of the control input, the Event still left activated is overridden by the above-mentioned Event activations or paging calls initiated from the ZP-001T regardless of priority settings.

### Controls to be performed during power-OFF

The power switch located on the amplifier front panel is a soft-switch, and not a mechanical switch to be used to turn on or off the power supply's primary side. Therefore, the internal microcomputer is still operating even if the power switch is set to OFF.

The following controls can be performed when the power is OFF.

- Remote power control by control input
  Power can be switched on and off using the external contact.
- Event activation by control input
  Turns on the unit's power and activates the assigned Event (set to Trigger) using the external contact. The unit returns to power-OFF state after Event operation completion.
- Paging by the ZP-001T
  Provides the same operation as that which is stated in "Event activation by control input" above.

## 10. SYSTEM DESIGN-TO-OPERATION FLOW

Shown below is the flow from system design to its operation, which is used in the matrix mode.

**1. Design the system.**

1.1. Determine the number of inputs and outputs.
1.2. Select modules.

**2. Prepare equipment.**

2.1. Mount modules. (Refer to p. 50.)
2.2. Check to confirm that the Mode switch is set to the matrix mode. (Refer to p. 15.)
2.3. Connect the power source to the unit using the power cord, then turn on the power switch.

**3. Perform equipment settings.**

3.1. Set the audio input. (Refer to p. 26.)
3.2. Set the audio output. (Refer to p. 27.)
3.3. Set the Event. (Refer to p. 28.)
3.4. Set the utility function. (Refer to p. 29.)
3.5. Perform preliminary settings for the adjustment function. (Refer to p. 31.)
3.6. Set the key lock function. (Refer to p. 32.)
3.7. Switch off the power. (Refer to p. 16.)

**4. Install equipment.**

4.1. Mount equipment in a rack. (Refer to p. 52.)
4.2. Perform connections. (Refer to p. 53.)

**5. Adjust equipment at the site.**

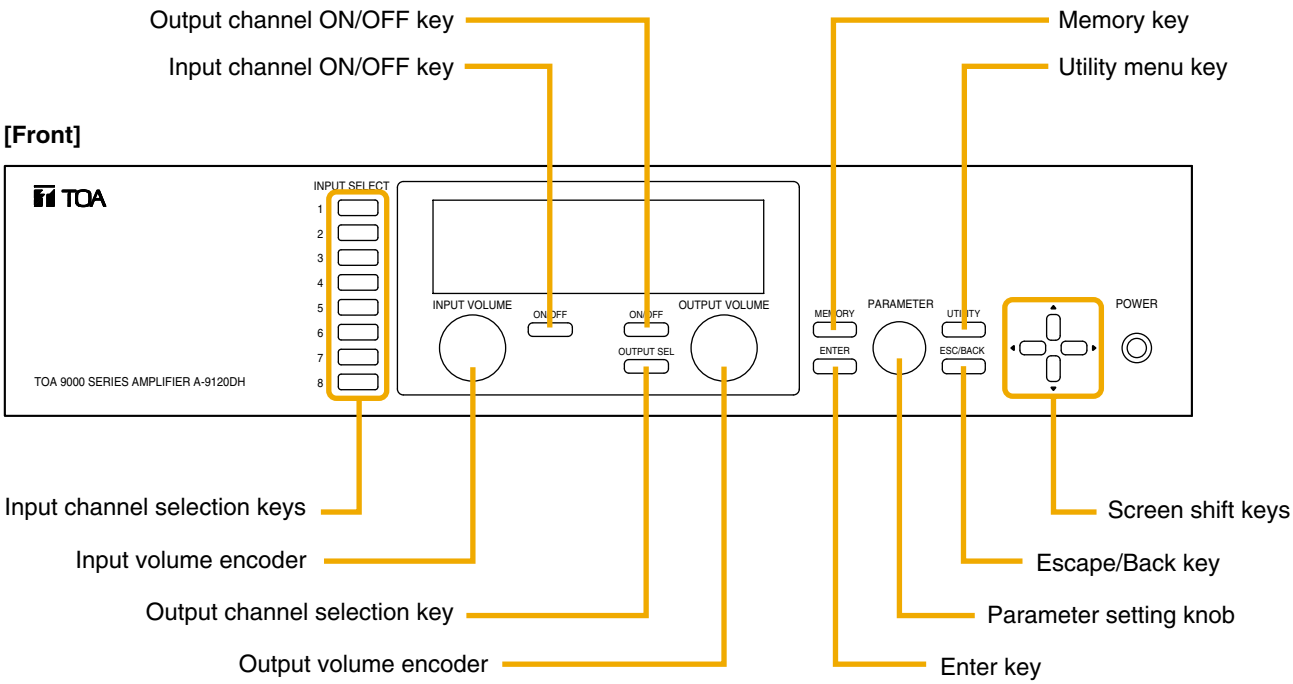
5.1. Switch on the power. (Refer to p. 16.)
5.2. Make adjustments while monitoring the sound. (Refer to p. 31.)

**6. Operate the system.**

- Activate set broadcast patterns through remote control. (Refer to p. 17.)
- Perform operation using the front panel-mounted keys and knobs. (Refer to p. 16.)
- Make paging calls. (Refer to p. 19.)

# 11. SETTING

## 11.1. Setting Keys and Knobs

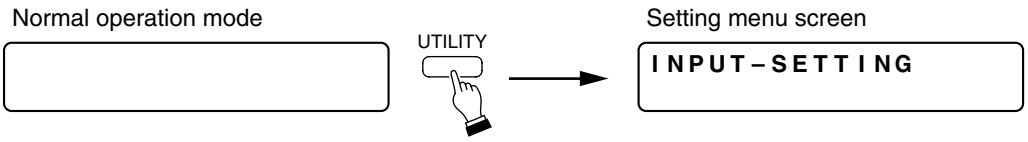



This figure represents the A-9120DH.

## 11.2. Basic Setting Operation

### 11.2.1. Entering the setting mode (matrix mode only)

Holding down the Utility menu key for 2 seconds or more displays the setting menu screen.



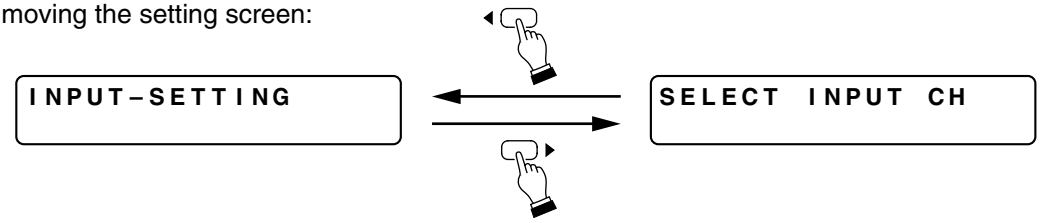

### 11.2.2. Setting screen operation examples

**[Moving the setting screen or setting item]**

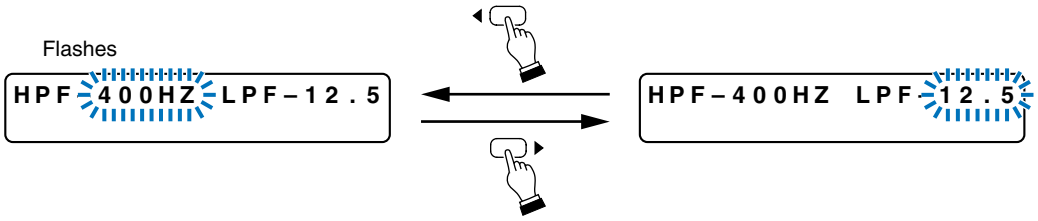
Use the Screen shift key mainly. (The Enter and ESC/BACK keys may also be used.)

- Examples of using the Left and Right shift keys

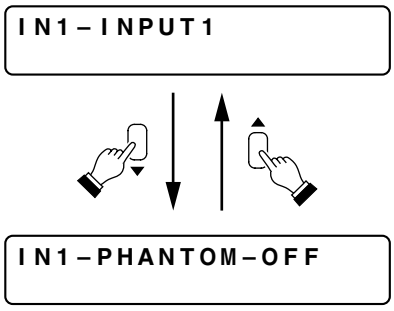
When moving the setting screen:




When moving the setting item on the same screen:

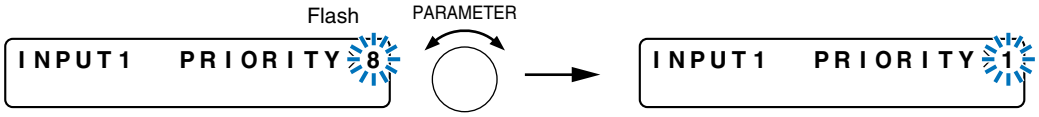



- Example of using the Up and Down shift keys

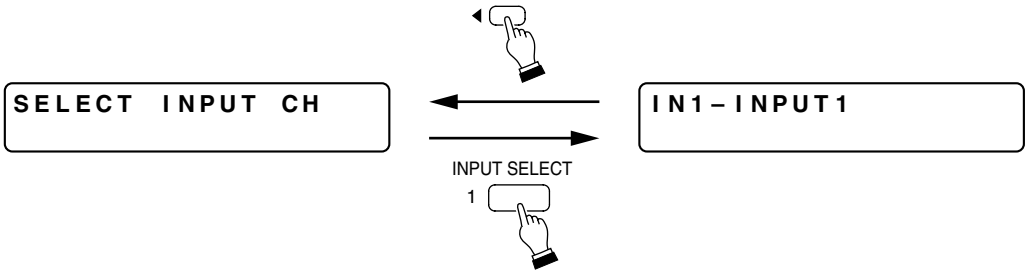


**[Setting content selection]**

Use the Parameter setting knob. The cursor position for the setting contents flashes.

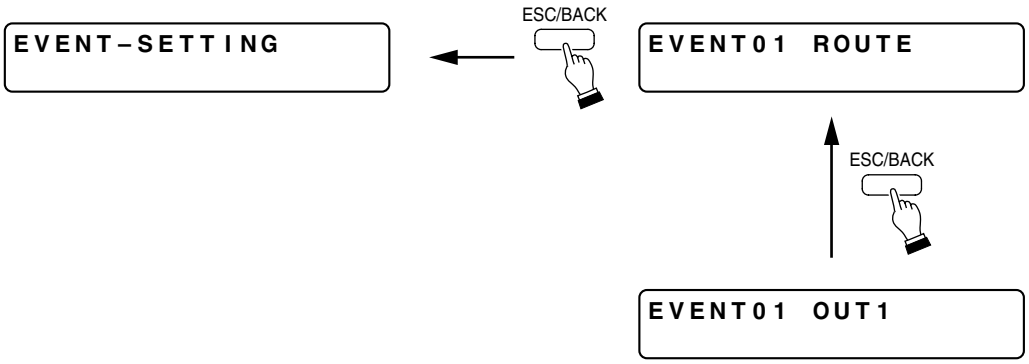



Use each selection key to select the input and output channels.



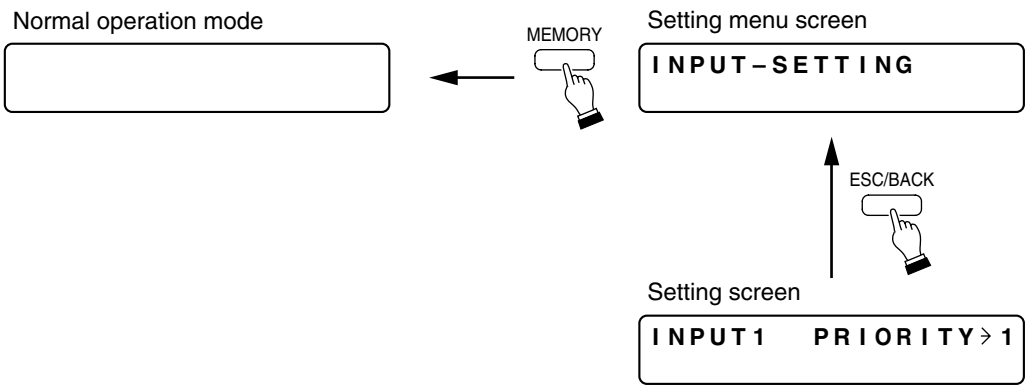

### 11.2.3 Returning from each setting screen to the screen on the upper hierarchy level

Pressing the Escape/Back key when each setting screen is displayed returns the display to the setting start screen on the upper hierarchy level.



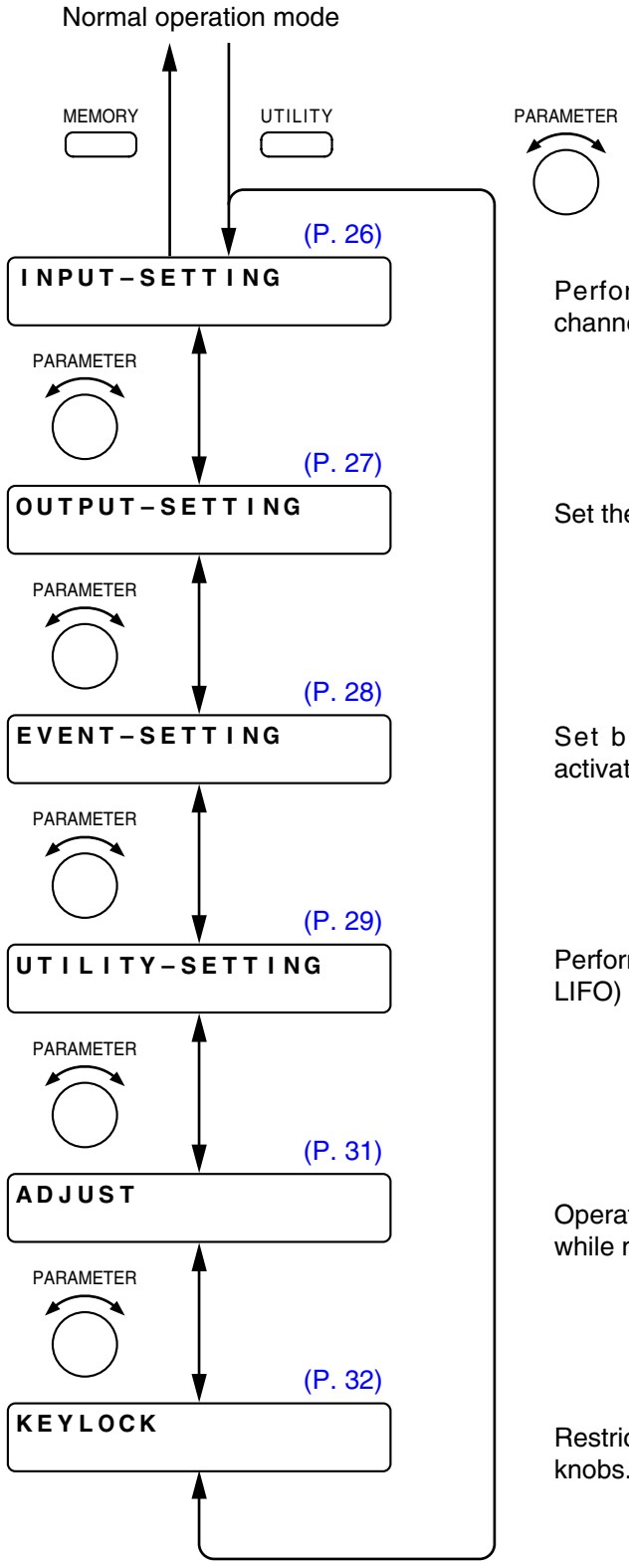

### 11.2.4. Returning from setting mode to normal operation mode (matrix mode only)

- Pressing the Escape/Back key when the setting screen is displayed returns the display to the setting menu screen.
- Pressing the Memory key when the setting menu screen is displayed returns the display to the normal operation mode.



## 11.3. Matrix Mode Setting Menu Flow

Ensure that the Mode switch on the unit's rear panel is set to the MATRIX position before performing the setting.
The setting items include those which must be set before operation (audio input/output, Event, and utility settings), those which are adjusted while actually monitoring the sound (adjustment mode settings), and those which restrict operations of front panel-mounted keys and knobs (key lock settings).
Select each item on the setting menu screen that appears after entering the setting mode, then perform detailed settings for the selected items.




Perform settings related to individual input and output channel names or input sources.

Set the name of each output channel.

Set broadcast patterns, BGM broadcast groups and activation, and BGM broadcast termination.

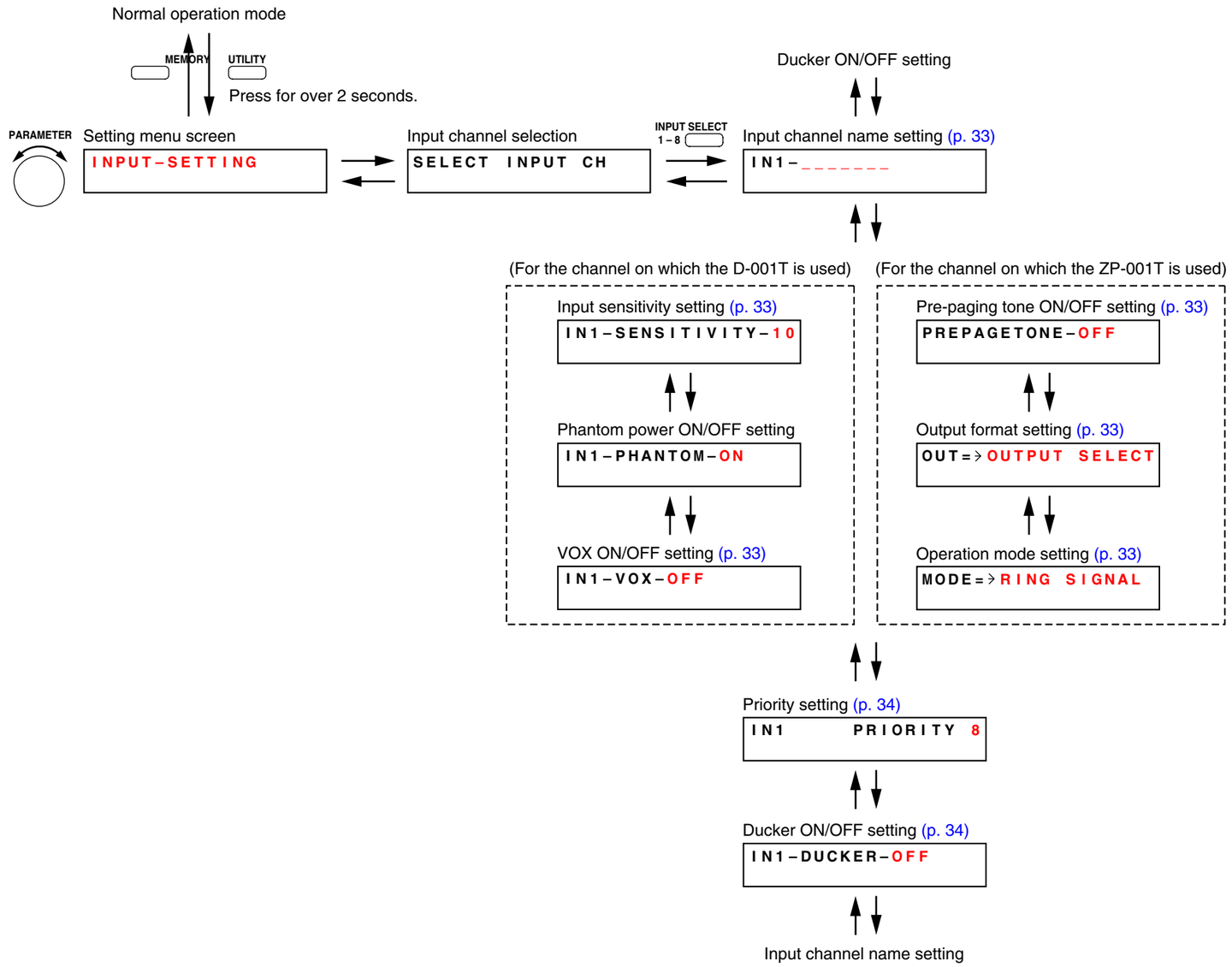
Perform settings related to remote control, priority (FIFO and LIFO) settings and other utility settings.

Operate the unit actually and adjust the sound in real time while monitoring the sound.

Restrict the use of the unit's front panel-mounted keys and knobs.

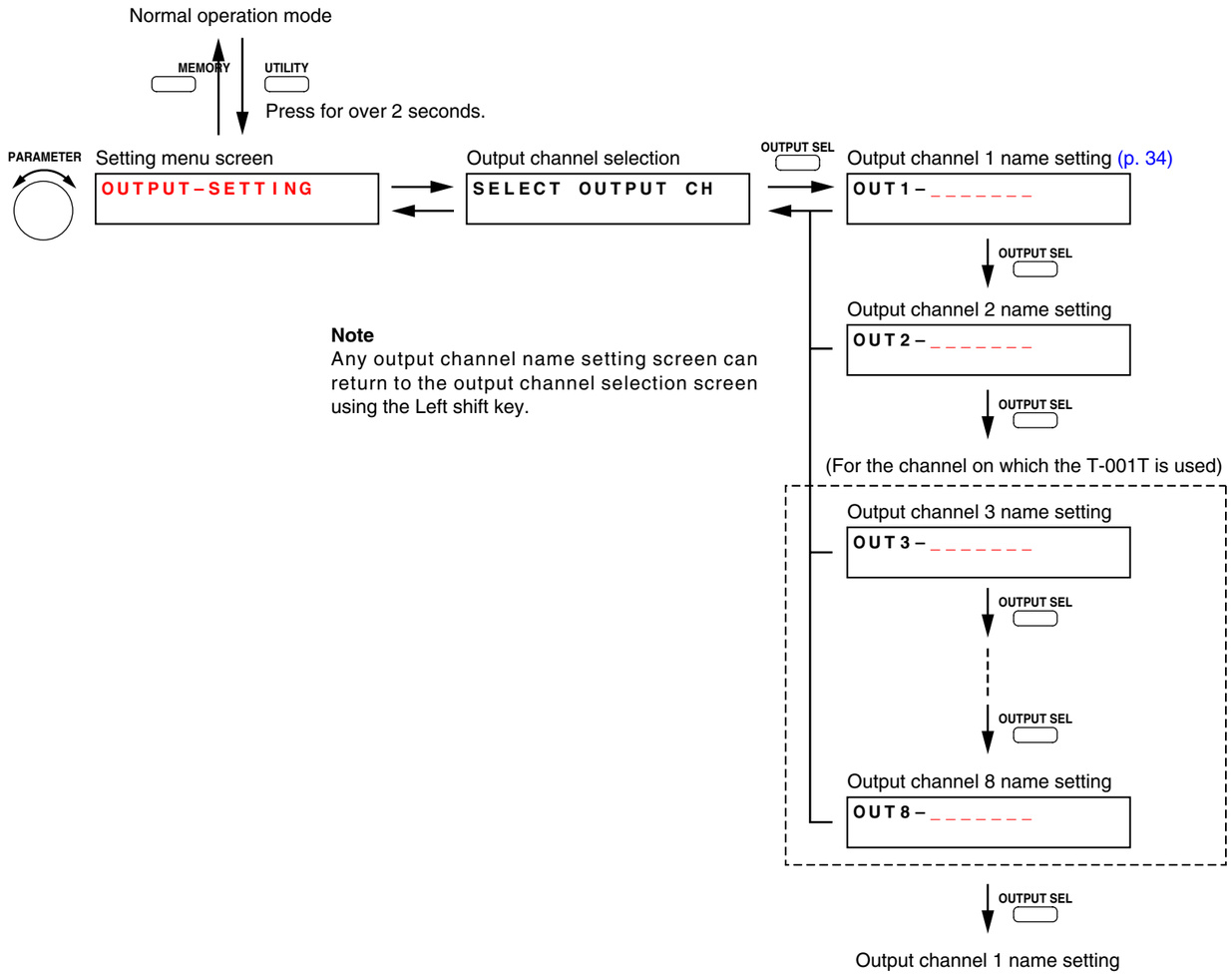
### 11.3.1. Audio input setting

The screen display examples shown below may differ from actual displays.
The on-screen indications shown in red here (actually shown by flashing cursors) are parameters or setting contents to be selected with the Parameter setting knob, input channel selection key or other designated keys.
Unless otherwise specified, the indications of the [↑], [↓], [←], and [→] arrows represent that the screen is switched with the Screen shift key.



### 11.3.2. Audio output setting

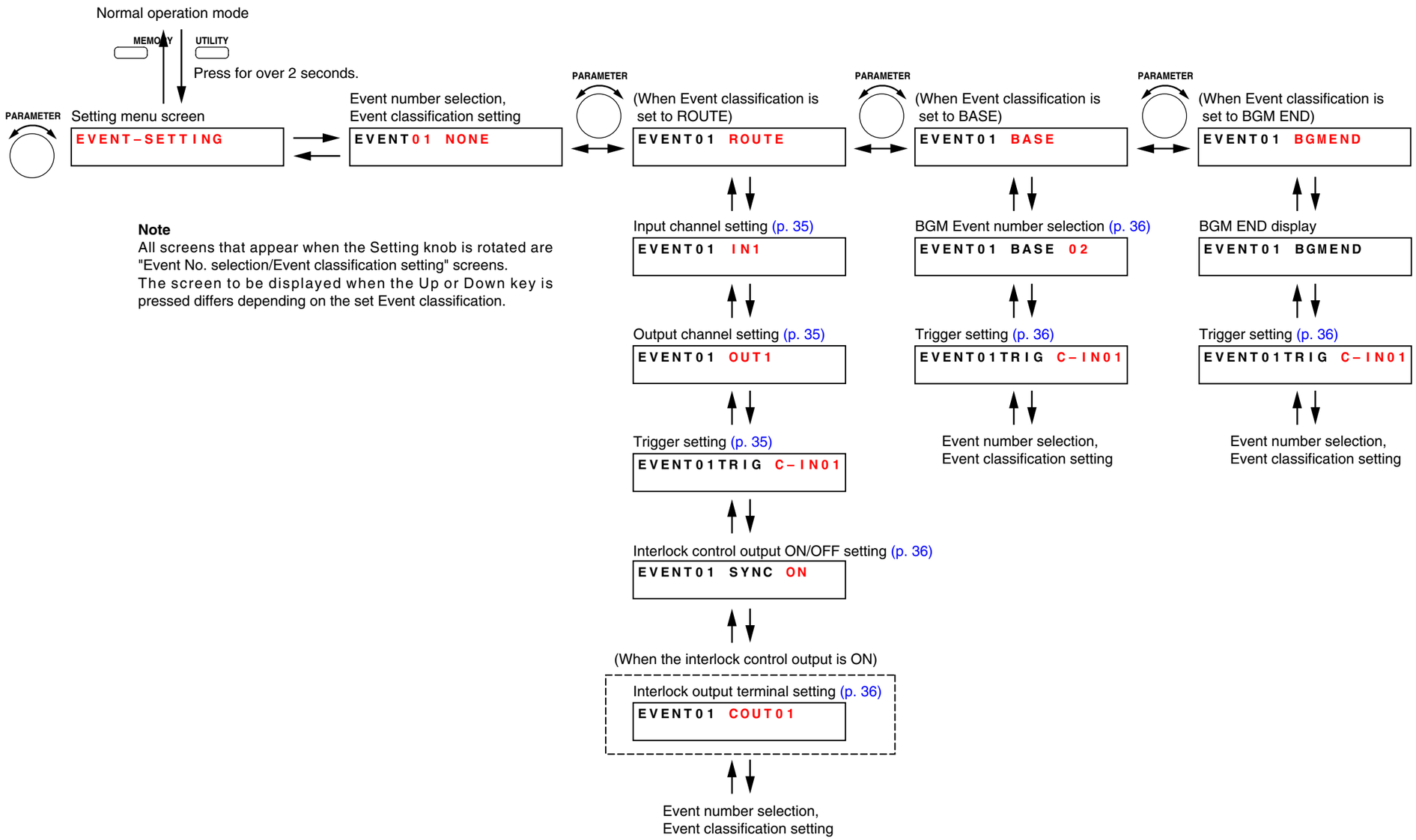
The screen display examples shown below may differ from actual displays.
The on-screen indications shown in red here (actually shown by flashing cursors) are parameters or setting contents to be selected with the Parameter setting knob, input channel selection key or other designated keys.
Unless otherwise specified, the indications of the [↑], [↓], [←], and [→] arrows represent that the screen is switched with the Screen shift key.




**Note**
Any output channel name setting screen can return to the output channel selection screen using the Left shift key.

### 11.3.3. Event setting

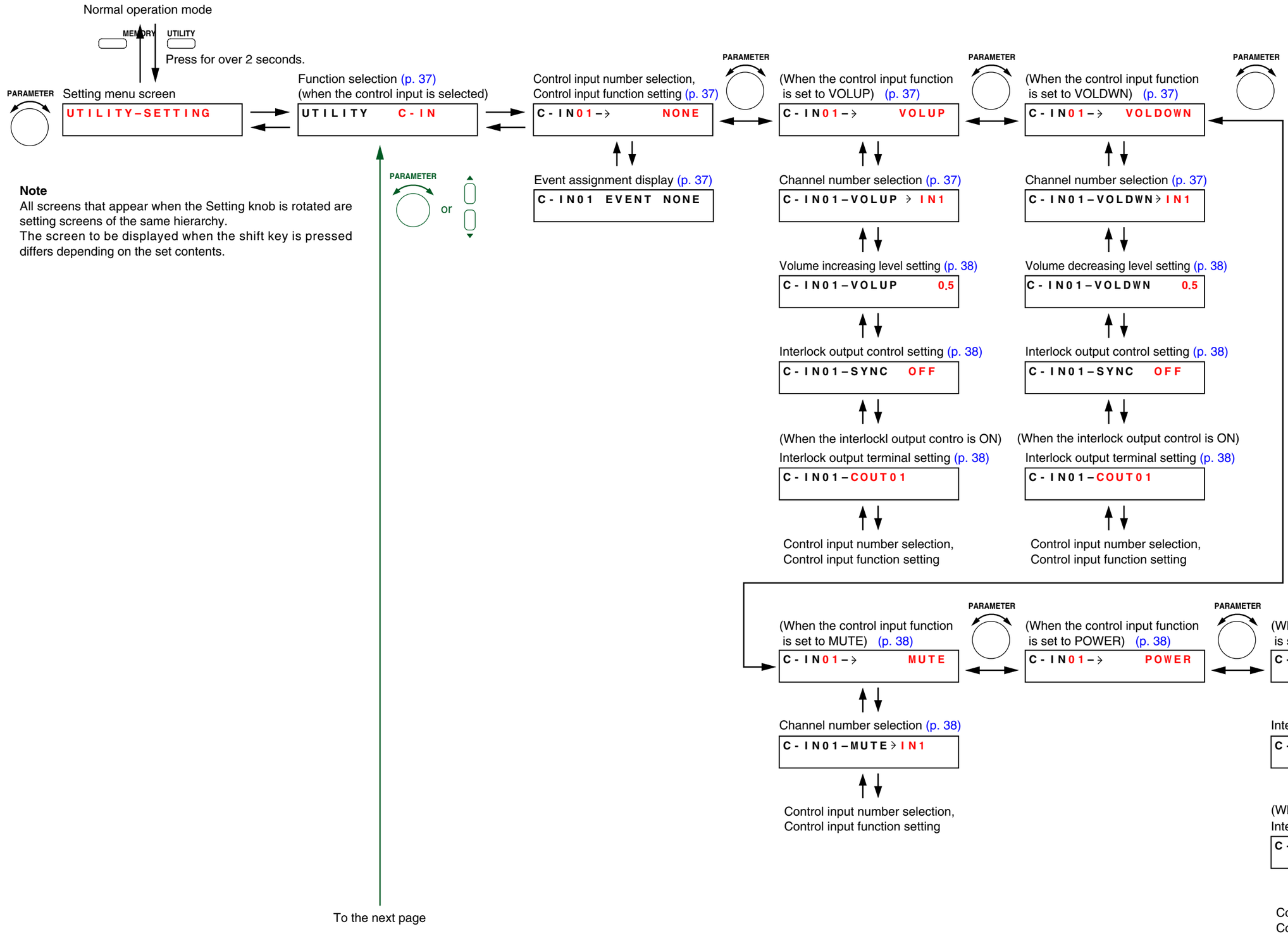
The screen display examples shown below may differ from actual displays.
The on-screen indications shown in red here (actually shown by flashing cursors) are parameters or setting contents to be selected with the Parameter setting knob, input channel selection key or other designated keys.
Unless otherwise specified, the indications of the [↑], [↓], [←], and [→] arrows represent that the screen is switched with the Screen shift key.




**Note**
All screens that appear when the Setting knob is rotated are "Event No. selection/Event classification setting" screens.
The screen to be displayed when the Up or Down key is pressed differs depending on the set Event classification.

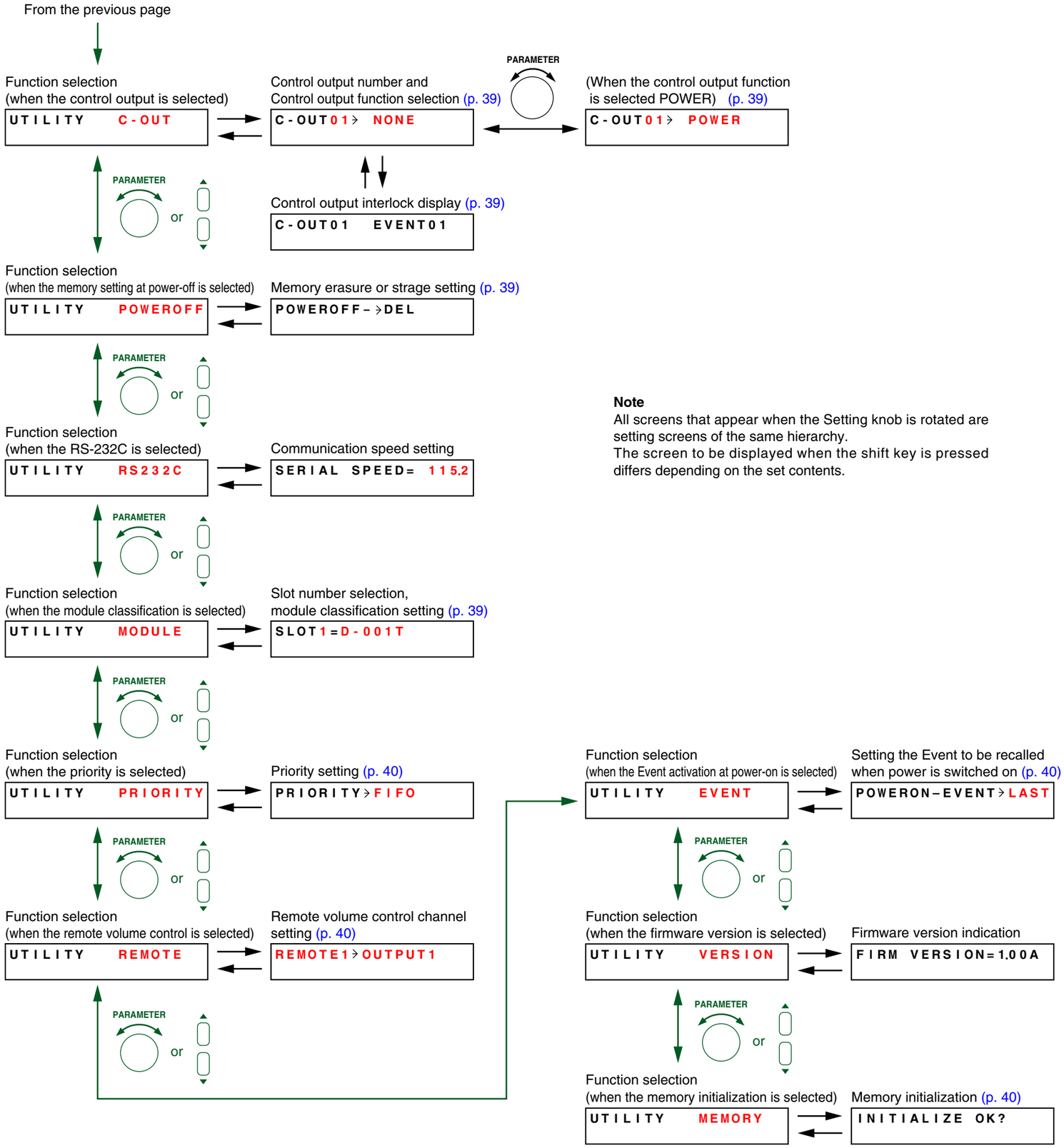
### 11.3.4. Utility setting

The screen display examples shown below may differ from actual displays.
The on-screen indications shown in red here (actually shown by flashing cursors) are parameters or setting contents to be selected with the Parameter setting knob, input channel selection key or other designated keys.
Unless otherwise specified, the indications of the [↑], [↓], [←], and [→] arrows represent that the screen is switched with the Screen shift key.




**Note**
All screens that appear when the Setting knob is rotated are setting screens of the same hierarchy.
The screen to be displayed when the shift key is pressed differs depending on the set contents.

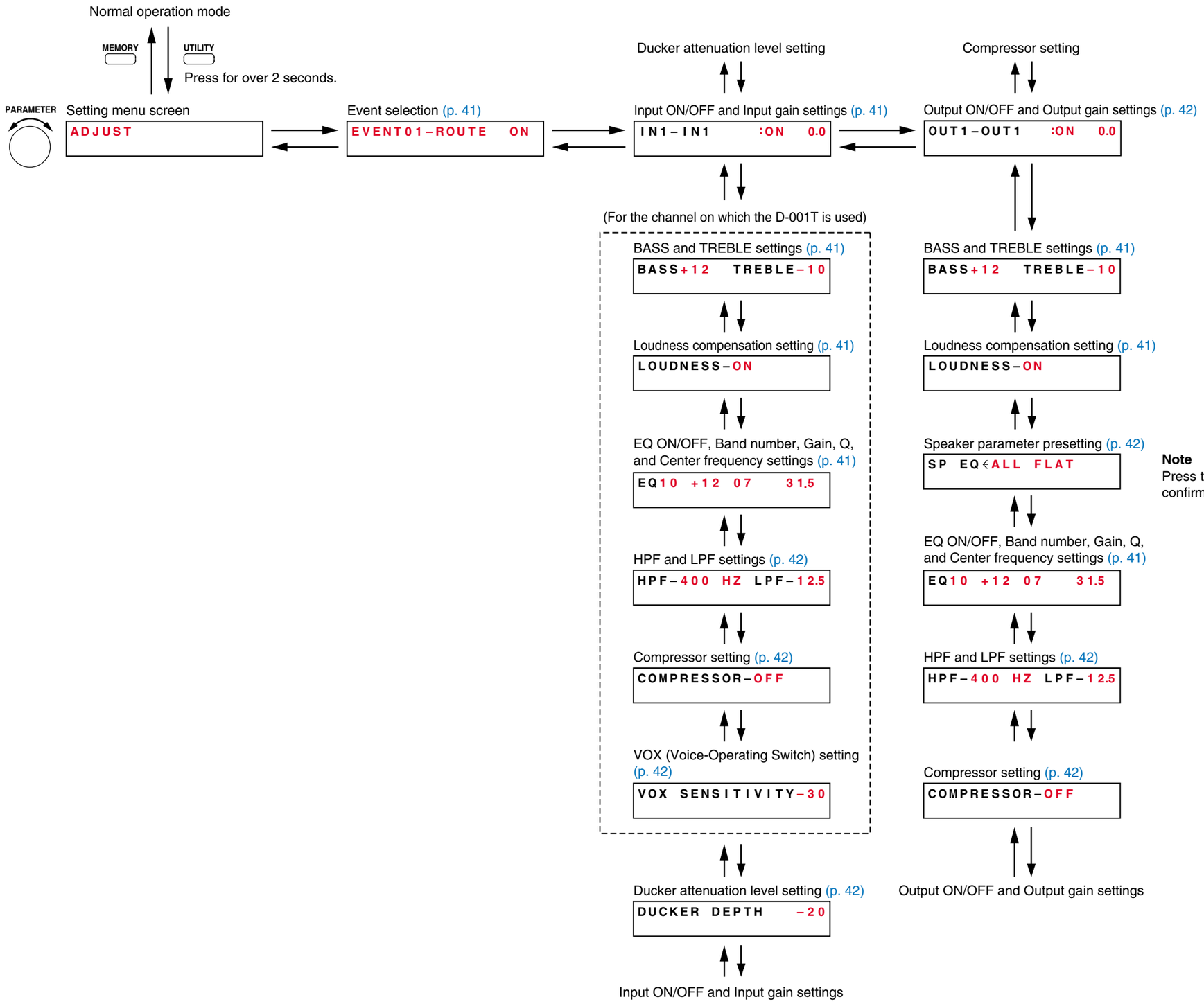
To the next page




**Note**
All screens that appear when the Setting knob is rotated are setting screens of the same hierarchy.
The screen to be displayed when the shift key is pressed differs depending on the set contents.

### 11.3.5. Adjustment mode setting

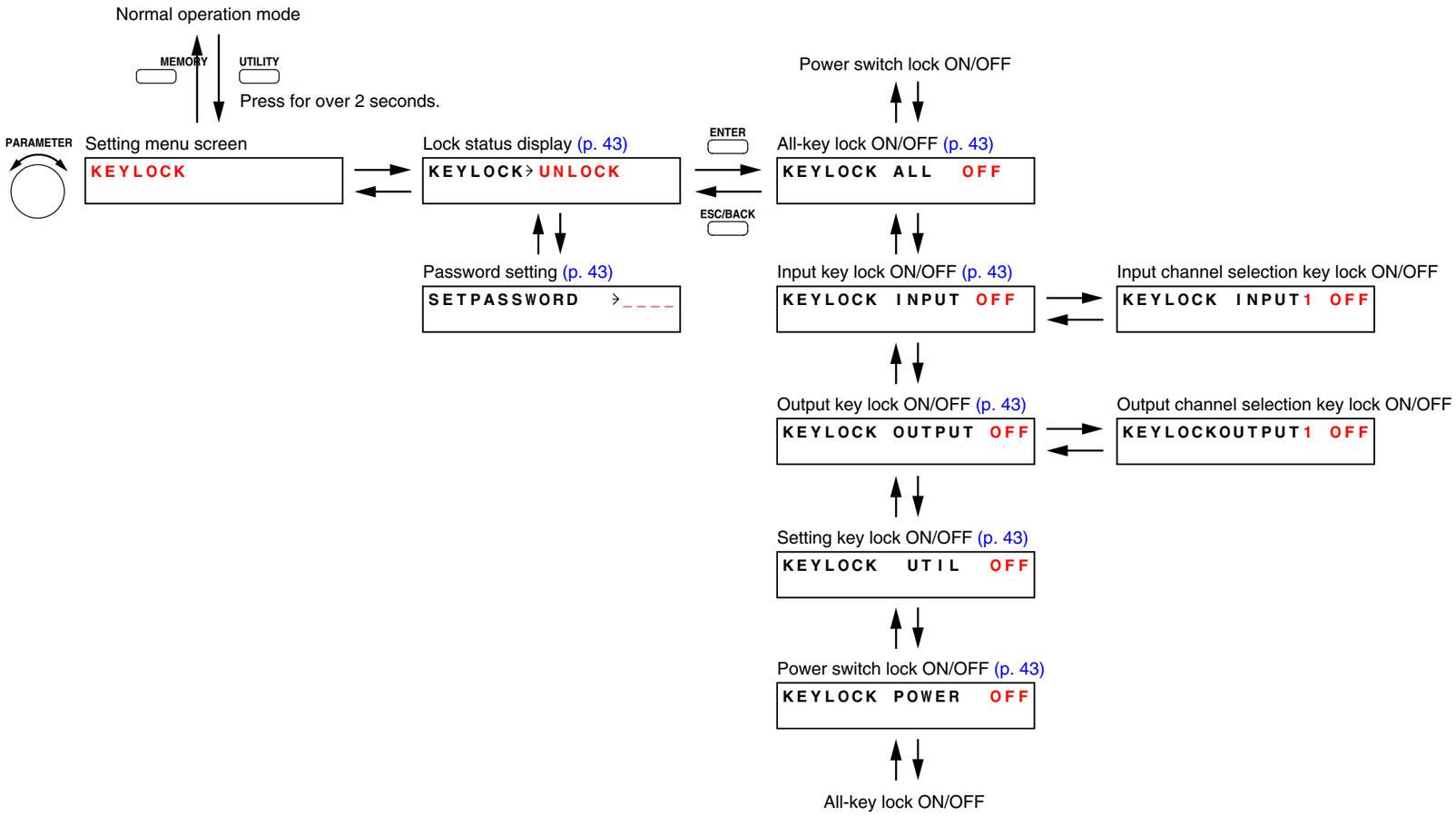
The screen display examples shown below may differ from actual displays.
The on-screen indications shown in red here (actually shown by flashing cursors) are parameters or setting contents to be selected with the Parameter setting knob, input channel selection key or other designated keys.
Unless otherwise specified, the indications of the [↑], [↓], [←], and [→] arrows represent that the screen is switched with the Screen shift key.


Normal operation mode
MEMORY
UTILITY
Press for over 2 seconds.
PARAMETER
Setting menu screen
ADJUST
Event selection (p. 41)
EVENT01–ROUTE ON
Ducker attenuation level setting
Input ON/OFF and Input gain settings (p. 41)
IN1–IN1 :ON 0.0
Compressor setting
Output ON/OFF and Output gain settings (p. 42)
OUT1–OUT1 :ON 0.0
(For the channel on which the D-001T is used)
BASS and TREBLE settings (p. 41)
BASS+12 TREBLE–10
Loudness compensation setting (p. 41)
LOUDNESS–ON
EQ ON/OFF, Band number, Gain, Q, and Center frequency settings (p. 41)
EQ10 +12 07 31.5
HPF and LPF settings (p. 42)
HPF–400 HZ LPF–12.5
Compressor setting (p. 42)
COMPRESSOR–OFF
VOX (Voice-Operating Switch) setting (p. 42)
VOX SENSITIVITY–30
Ducker attenuation level setting (p. 42)
DUCKER DEPTH –20
Input ON/OFF and Input gain settings
BASS and TREBLE settings (p. 41)
BASS+12 TREBLE–10
Loudness compensation setting (p. 41)
LOUDNESS–ON
Speaker parameter presetting (p. 42)
SP EQ⩽ALL FLAT
EQ ON/OFF, Band number, Gain, Q, and Center frequency settings (p. 41)
EQ10 +12 07 31.5
HPF and LPF settings (p. 42)
HPF–400 HZ LPF–12.5
Compressor setting (p. 42)
COMPRESSOR–OFF
Output ON/OFF and Output gain settings

**Note**
Press the Enter key to confirm this setting.

### 11.3.6. Key lock function setting

The screen display examples shown below may differ from actual displays.
The on-screen indications shown in red here (actually shown by flashing cursors) are parameters or setting contents to be selected with the Parameter setting knob, input channel selection key or other designated keys.
Unless otherwise specified, the indications of the [↑], [↓], [←], and [→] arrows represent that the screen is switched with the Screen shift key.



## 11.4. Matrix Mode Setting Screen

### 11.4.1. Audio input setting items

**Input channel name setting**

```
IN1–_______
```

The flashing portion is the cursor position for entering channel name characters.
Select a character from the alphanumeric character list by rotating the Parameter setting knob, then move the cursor with the Right shift key. To delete the character, select [ _ ] (under-bar) with the Parameter setting knob.
Up to 7 characters can be used to set the name.

**Input Sensitivity settings**

```
IN1–SENSITIVITY–10
```

Select the input sensitivity from the following 9 levels depending on the input sources:
–60 dB, –54 dB, –48 dB, –42 dB, –36 dB, –30 dB, –24 dB, –18 dB, and –10 dB

**VOX ON/OFF setting (when the D-001T is used)**

```
IN1–VOX–OFF
```

Set the voice-operated switch (VOX) to ON or OFF.

ON: The gate opens to allow audio signals to pass through it only when the signals are input to the module.

OFF: The gate is always open regardless of whether or not the audio signal is present.

**Pre-paging tone ON/OFF setting (when the ZP-001T is used)**

```
PREPAGETONE–OFF
```

Set whether or not to sound a one-tone chime before paging.

**Output format setting (when the ZP-001T is used)**

```
OUT=→OUTPUT SELECT
```

Select the paging output.

OUTPUT SELECT: Sets the 9000 Series amplifiers' output or the T-001T's output as the paging output.

ZONE SELECT: Sets the ZP-001T's contact output as the paging output.

Note that the Zone Select mode cannot be selected with the current firmware.

**Operation mode setting (when the ZP-001T is used)**

```
MODE= RING SIGNAL
```

Select the method of activating paging.

RING SIGNAL: Paging is operated if an IR signal is received when the connection between the unit and PABX is established. The ZP-001T module functions as a telephone.

PAGING PORT: Paging is operated if a start signal (no-voltage make signal) is received from the paging trunk when the connection between the unit and PABX is established.

**Priority setting**

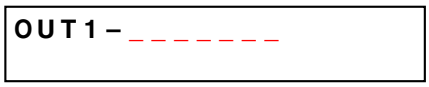
Assign priority levels of 1 – 8 (high to low) to the selected input signals.
The priority level given to each Event is based on the priority level set here.
The signal set to priority level 8 is handled as BGM in Event settings. It is possible to assign the same priority level to multiple inputs. When two or more inputs are simultaneously broadcast in the same zone, the input with higher priority takes precedence. However, when multiple inputs with the same priority are simultaneously broadcast, they are allowed to go through according to the priority settings (refer to p. 40 "Priority setting").

**Ducker ON/OFF setting**

Set the ducker function to ON or OFF.
When an input channel receives the signal exceeding the gate threshold level, the ducker function automatically attenuates input signals of other channels with lower priority.

### 11.4.2. Audio output setting items

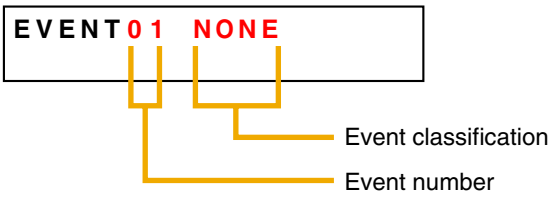
**Output channel name setting**




The flashing portion is the cursor position for entering channel name characters.
Select a character from the alphanumeric character list by rotating the Parameter setting knob, then move the cursor with the Right shift key.
Up to 7 characters can be used to set the name.

### 11.4.3. Event setting items

**Event number selection and Event classification settings**




The flashing portion is the cursor position. Use the Left and Right shift keys to move the cursor on this screen. Choose the Event number from 1 – 32, and the Event classification from "NONE," "ROUTE," "BASE," and "BGM END."

NONE: Invalidates the selected Event.

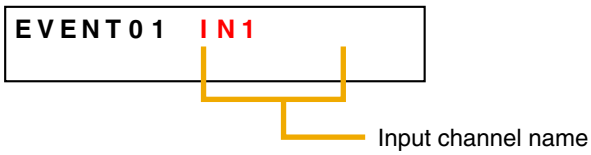
ROUTE: Sets broadcast patterns consisting of input/output, trigger, and other settings.

BASE: Groups broadcast patters which have been set to "Priority 8 Input with Trigger set to NONE " in Classification ROUTE, so that they may be activated with a single trigger. This classification is normally used to set the Event of BGM broadcasts.

BGM END: Used to perform settings for terminating all Events to which inputs with priority 8 are assigned.

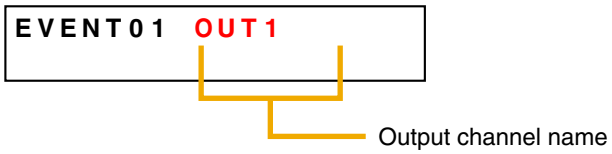
**Note**
Screens that appear when the Up or Down shift key is pressed differ depending on the Event classification settings.

**Input channel setting**




Set the input channel using the Input channel selection key.
The name of the set input channel is displayed on the screen.

**Output channel setting**




- Select the output channel using the Output channel selection key, then confirm the selection by setting the Output channel ON/OFF key to ON (the output channel indicator, red dot on the VFD screen lights).
- The name of the set output channel is displayed on the screen.
- Repeat above operations to set multiple outputs.

**Trigger setting (when Event classification is set to ROUTE)**

Set how to activate the selected Event.

C-IN1 to C-IN04 (C-IN1 to C-IN2 when the C-001T module is used):
Closing the designated control input terminal activates the Event.

VOX: The event is activated when the selected input channel receives a signal.
**Note**
The D-001T module must be used for input, and the VOX set to ON in the audio input setting.

NONE: External control cannot be used for activation. Set the trigger setting here to NONE when designating the selected Event number as a BGM pattern.

**Interlock control output ON/OFF setting**

| EVENT01 SYNC ON |
|---|

Set whether or not to close the control output terminal in synchronization with the Event's activation.

ON: Control output terminal is closed when the Event is activated. (The terminal is continuously closed during Event activation.)

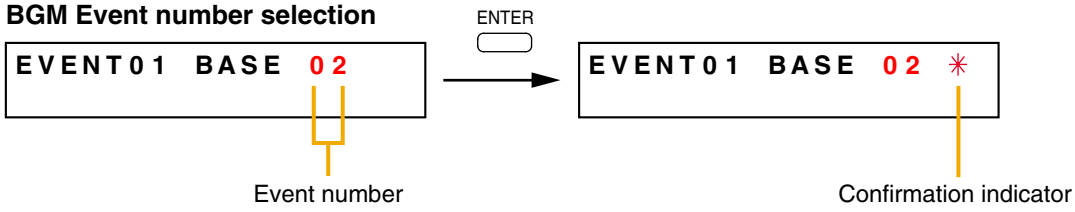
OFF: Control output does not interlock with the Event's activation.

**Interlock output terminal setting**

| EVENT01 COUT01 |
|---|

Set the control output terminals 1 – 4 (1 – 12 when the C-001T is used) which are closed in synchronization with the activation of the Event.

**BGM Event number selection**




Rotating the Parameter setting knob displays only the priority-8 inputs with the trigger function set to NONE (normally BGM broadcasts) out of the Event numbers with Event classification set to ROUTE.
When the Enter key is pressed for confirmation, an asterisk [✳] is displayed on the right of the confirmed number. Up to 4 Event numbers can be set by repeating above-mentioned operations. If the number of confirmed Event numbers exceeds 4, each number is erased in chronological order.

**Trigger setting (when Event classification is set to BASE)**

| EVENT01TRIG C-IN01 |
|---|

C-IN01 to C-IN04 (C-IN01 to C-IN12 when the C-001T module is used):
Making the designated control input terminal activates the Event. The control input terminals that have already been set cannot be set.

NONE: External control cannot be used for activation.

**Trigger setting (when Event classification is set to BGM END)**

| EVENT01TRIG C-IN01 |
|---|

Activating the selected Event terminates all Events for Priority-8 inputs.
Set the control input that activates the Event termination.
Choose the control input from C-IN01 to C-IN04 (C-IN01 to C-IN12 when the C-001T module is used).
The control input terminals that have already been set cannot be used.

### 11.4.4. Utility setting items

**Function selection**

CIN: Sets the functions to be assigned to the control input terminals. No function can be assigned to the control input terminals set to "Event-Trigger."

COUT: Sets the functions to be assigned to the control output terminals.

POWER OFF: Sets whether or not to save data of the volume level set in normal operation mode when the power is switched off.

RS232C: Sets the RS-232C communication speed.

MODULE: Displays or sets the module classification.

PRIORITY: Sets priority order when multiple inputs with the same priority are broadcast.

REMOTE: Sets the input and output channels for which the volume is remotely adjusted.

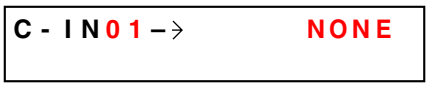
EVENT: Sets the Event that is activated when the unit's power is turned on.

VERSION: Displays the firmware version.

MEMORY: Initializes memory.

**[When the function is set to CIN:]**

**Control input number selection and control input function setting**

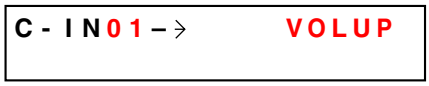



Use the Left and Right shift keys to move the setting items on the screen.
When the Down shift key is pressed with the control input function set to NONE and the cursor at the control input number, the Event number assigned to that control input number can be confirmed. If no Event is assigned to that control input number, the NONE indication is displayed.

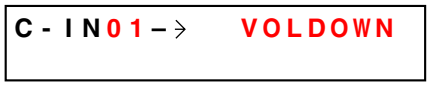
**Event assignment display**

When the displayed control input (C-IN01 in this example) is set to Trigger in the Event setting, the Event number is displayed, making it impossible to assign the function on the utility screen. If the control input is not set to Trigger, the Event number is not displayed.

**(When the control input function is set to VOLUP:)**




**(When the control input function is set to VOLDWN:)**




Assign the volume-up or volume-down function to the control input.
Closing the control input terminal increases or decreases the volume of the set input channel.

**Channel number selection (VOLUP)**

**Channel number selection (VOLDWN)**

Using the Input channel or Output channel selection key, select the channel number for which you want to change the volume.

**Volume increasing level setting**

C - IN01 – VOLUP 0.5

**Volume decreasing level setting**

C - IN01 – VOLDWN 0.5

Set the volume level (dB) to increase or decrease.

**Interlock output control setting**

C - IN01 – SYNC OFF

Perform ON/OFF setting for the function that closes the control output terminal in synchronization with the control input terminal closure of the set number.

**Interlock output terminal setting**

C - IN01 – COUT01

This screen is displayed only when the interlock output control setting is set to ON.
Set the control output terminals 1 – 4 (1 – 12 when the C-001T is used) which are closed in synchronization with the control input of the set number. Avoid using the control output terminals designated as interlock output terminals in the Event setting.

**(When the control input function is set to MUTE:)**

C - IN01 – → MUTE

Assign the function that mutes the input or output channel to the control input.
Closing the control input terminal mutes the set channel.

**Channel number selection (MUTE)**

C - IN01 – MUTE IN1

Using the Input channel or Output channel selection key, select the channel number to be muted.

**(When the control input function is set to POWER:)**

C - IN01 – → POWER

Assign the power ON/OFF function to the control input. Power turns on when the control input terminal is closed, and turns off when the control input terminal is opened.

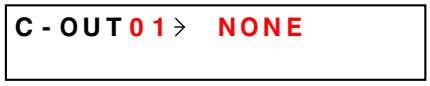
**(When the control input function is set to EMG-MUTE:)**

C - IN01 – → EMG-MUTE

Assign the function that simultaneously mutes all output channels to the control input. Closing the control input terminal mutes all output channels. This function is used to cut off the output provided from the unit during emergency broadcast operation.

**[When the function is set to COUT:]**

**Control output number and control output function selection**




Use the Left and Right shift keys to move the setting items on the screen.
When the Down shift key is pressed with the control output function set to NONE and the cursor at the control input number, the Event number assigned to that control output number can be confirmed.
If no Event is set to that control output number, the NONE indication (nothing assigned) is displayed.

**Control output interlock display**

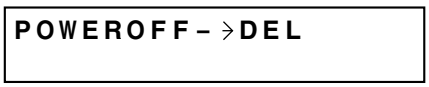
When the displayed control output (C-OUT01 in this example) is designated as interlock output in the Event setting, its Event number is displayed, making it impossible to assign the function on the utility screen.
If not designated as interlock output, the NONE indication is displayed for the Event number.

**(When the control output function is set to POWER:)**

Turning on the power switch closes the control output terminal.

**[When the function is set to POWEROFF:]**

**Memory erasure or storage setting**



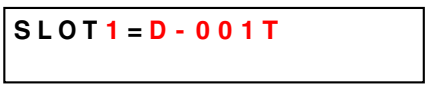

Set whether or not to save data of the volume level set in normal operation status when the power is switched off.

DEL: Data not saved.

SAVE: Saves data.

**[When the function is set to MODULE:]**

**Slot number selection and module classification setting**




Use the Left and Right shift keys to move the setting items on the screen.
For slots equipped with 9000 Series plug-in modules, their module model numbers are automatically displayed and cannot be changed.
For slots equipped with 900 Series input modules, select their model numbers using the Parameter setting knob.
The settings performed here are merely displayed, and have no effect on the audio input and other settings.

**[When the function is set to PRIORITY:]**

**Priority setting**

Set priorities when multiple inputs with the same priority level are simultaneously broadcast.

FIFO: Input that comes first is broadcast.
LIFO: The most recent input is broadcast.
MIX: All inputs are mixed and broadcast.

**[When the function is set to REMOTE:]**

**Remote volume control channel setting**

Set the input or output channels for which the volume is remotely adjusted by way of the unit's rear panel-mounted control I/O connection terminal. The indication REMOTE 1 refers to the REMT VOL 1 terminal of the control I/O connection terminal, while the indication REMOTE 2 represents the REMT VOL 2 terminal. Use the Left and Right shift keys to move the setting items on the screen.

**[When the function is set to EVENT:]**

**Setting the Event to be recalled when power is switched on**

Set the Event number to be activated when the unit's power is switched on. When LAST is selected, the Event which was last operated before the power was switched off is activated when the power is switched on again.

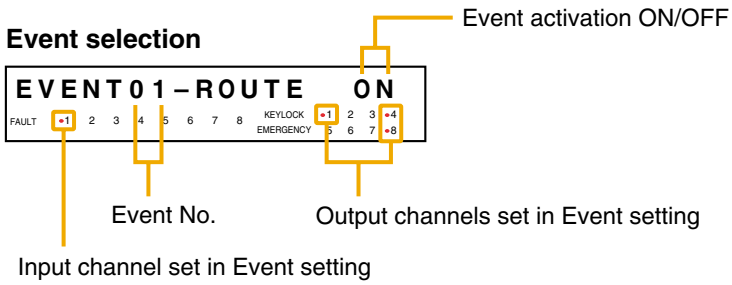
**[When the function is set to MEMORY:]**

**Memory initialization**

Pressing the Enter key initializes all of the unit's current settings to default settings.

### 11.4.5. Adjustment mode setting items

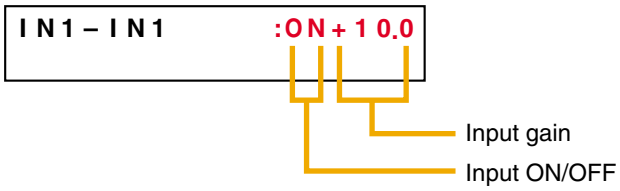
**Event selection**


Event activation ON/OFF
EVENT01–ROUTE ON
FAULT 1 2 3 4 5 6 7 8
KEYLOCK 1 2 3 4
EMERGENCY 5 6 7 8
Event No.
Output channels set in Event setting
Input channel set in Event setting

Rotate the Parameter setting knob to obtain the Event No. of which settings are desired to be adjusted.
The ON or OFF indication shows the corresponding Event activation status when the unit enters the Adjustment mode.
To adjust the Event's setting, turn the Event activation ON using the input channel ON/OFF key.

Make the Event selection here and press the Right shift key to make the Event-related adjustments.

**Input ON/OFF and Input gain settings**




Adjust the input gain with the input volume encoder.
To stop the sound output temporarily, press the input channel ON/OFF key.

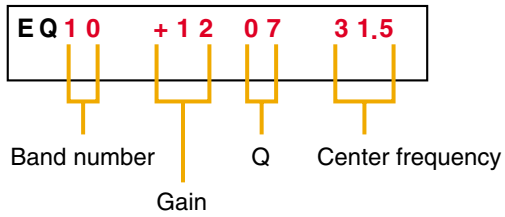
**BASS and TREBLE settings (input/output)**

Rotate the Parameter setting knob to set gains.
Press the Right or Left shift key to select BASS or TREBLE, of which gain value that flashes can be adjusted.

**Loudness compensation setting (input/output)**

Rotate the Parameter setting knob to set the loudness compensation function ON/OFF.
Setting ON boosts low frequencies.

**EQ ON/OFF, Band number, Gain, Q, and Center frequency settings (input/output)**




The indications on the right of "EQ" turn on and off as the Parameter setting knob is rotated.
When the indication is displayed, EQ is ON and a band number, gain, Q, and center frequency are displayed in this order from left to right. Use the Parameter setting knob to change each parameter, and the Left and Right keys to move the setting items.

**HPF and LPF settings (input/output)**

```
HPF–400 HZ LPF–12.5
```

Rotate the Parameter setting knob to set the cut-off frequencies.
Press the Right or Left shift key to select HPF or LPF, of which parameter that flashes can be adjusted.

**Compressor setting (input/output)**

```
COMPRESSOR–OFF
```

The compressor functions to protect the amplifier from overload or equalize the audio level to make sound easy to listen.
When set to ON, rotate the Parameter setting knob to set the adequate DEPTH that is the effective amount of compressor.

**VOX (Voice-Operatend Switch) setting**

```
VOX SENSITIVITY–30
```

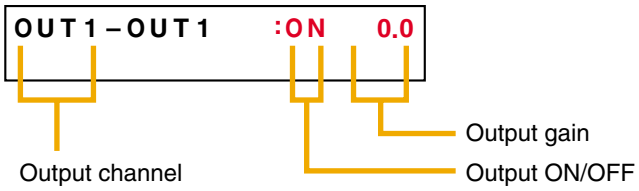
Set the input signal level necessary for enabling the VOX function.

**Ducker attenuation level setting**

```
DUCKER DEPTH –20
```

Set how much the input signal for the channel given lower priority than that of the currently set input channel should be attenuated.

**Output ON/OFF and Output gain settings**




Adjust the sound volume with the output volume encoder.
To stop the sound output temporarily, press the output channel ON/OFF key.
Select the output channel to adjust with the output channel selection key.

**Speaker parameter presetting**

```
SP EQ:ALL FLAT
```

Optimum equalization can be automatically set depending on the type of speaker to be used. If this function is not used or the speaker to be used is not included in a speaker list, set "SP EQ" to ALL FLAT. When the speaker type is selected from the speaker list, the number of bands that can be set on the next EQ setting screen decreases by the number of bands to be used in the setting performed on this screen. The number of bands to be used differs depending on the type of speaker.
To perform this setting, select the speaker model from the speaker list and press the Enter key to confirm.
(For EQ settings of each speaker model and "ALL FLAT" EQ setting, refer to p. 75.)

### 11.4.6. Key lock function setting items

Set the keys to be locked on the key lock function setting screen. The KEYLOCK indication lights after setting completion. Since a password is requested if the locked key is pressed, enter the password.

**Lock status display**

**(When locked:)**

When unlocked, pressing the Enter key gives access to each key lock setting screen.
When locked, a password must be entered. To enter, use the Input channel selection keys (1 – 8).
Locked keys are released when the correct password is entered.

**Password setting**

Passwords can be set only when the keys are not locked.
Use the Input channel selection key to set the password and use the Left and Right shift keys to move characters.

**All-key lock ON/OFF**

Selecting ON locks all keys located on the front panel.
If ON/OFF settings differ from key to key, the [- - -] indication is displayed when this screen appears.

**Input key lock ON/OFF**

Locks all Input channel selection keys, Input channel ON/OFF keys, and Input volume encoder.
If ON/OFF settings differ from key to key, the [- - -] indication is displayed when this screen appears.

**Output key lock ON/OFF**

Locks all Output channel selection keys, Output channel ON/OFF key, and Output volume encoder.
If ON/OFF settings differ from key to key, the [- - -] indication is displayed when this screen appears.

**Setting key lock ON/OFF**

Selecting ON locks Utility key, Memory key, Enter key, Escape/Back key, Parameter setting knob, and Screen shift keys.

**Power switch lock ON/OFF**

Locks the Power switch.

## 11.5. Settings in Adjustment Mode

In the adjustment mode, audio setting parameters can be set while monitoring the output sound. Input and output gain settings, input sound source equalization*, and sound equalization for individual output zones can be performed.
Since the setting parameters are individually adjusted for each Event, perform Event settings in advance.

* Input sound source equalization can be performed only for channels equipped with the D-001T module.

The adjustment procedure is described here using an example when paging is made in Event 2 during BGM broadcast in Event 1.

**Step 1.** Hold down the Utility menu key for 2 seconds or more in normal operation state.
The setting screen is displayed.

**Step 2.** Select ADJUST with the Parameter setting knob.
The screen is switched to the adjustment mode.

**Note**
In the adjustment mode, the Event selected in normal operation state continues to be broadcast.

**Step 3.** Press the Right shift key.
The Event selection screen is displayed.

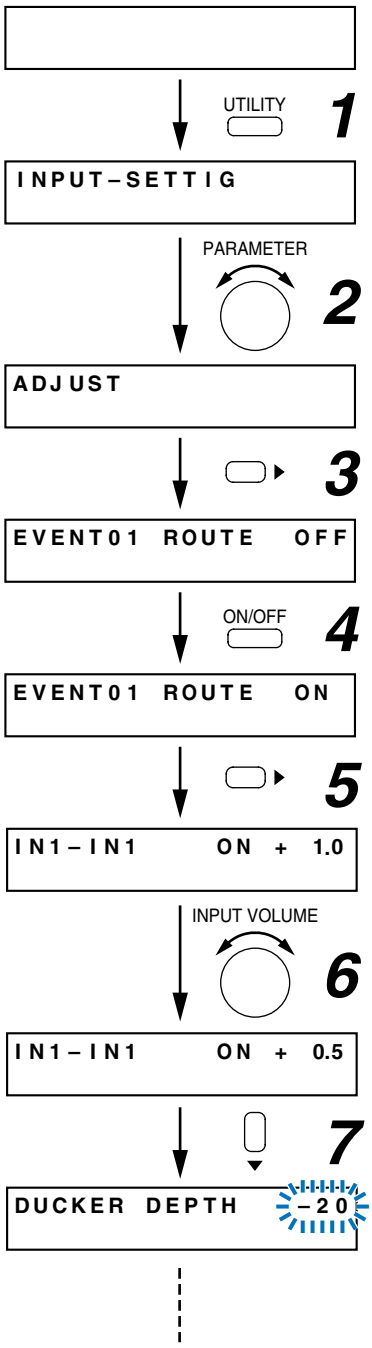
**Step 4.** Press the Input channel ON/OFF key to set the Event to ON.

**Note**
The Event alternates between ON and OFF each time the Input channel ON/OFF key is pressed.
Setting ON immediately activates the selected Event, and OFF terminates it.

**Step 5.** Press the Right shift key.
The input gain setting screen is displayed.
To stop the sound output temporarily, press the input channel ON/OFF key.

**Step 6.** Adjust the gain with the Input volume encoder.

**Step 7.** Press the Down shift key to display each input setting screen and adjust on-screen parameters with the Parameter setting knob.
When there are two or more setting items on the screen, select the items with the Left and Right keys.



**Step 8.** Return to the input gain setting screen and press the Right shift key.
The output ON/OFF and gain setting screen is displayed.

**Step 9.** Press the Right shift key so that the gain value flashes, then adjust the gain with the Output volume encoder.

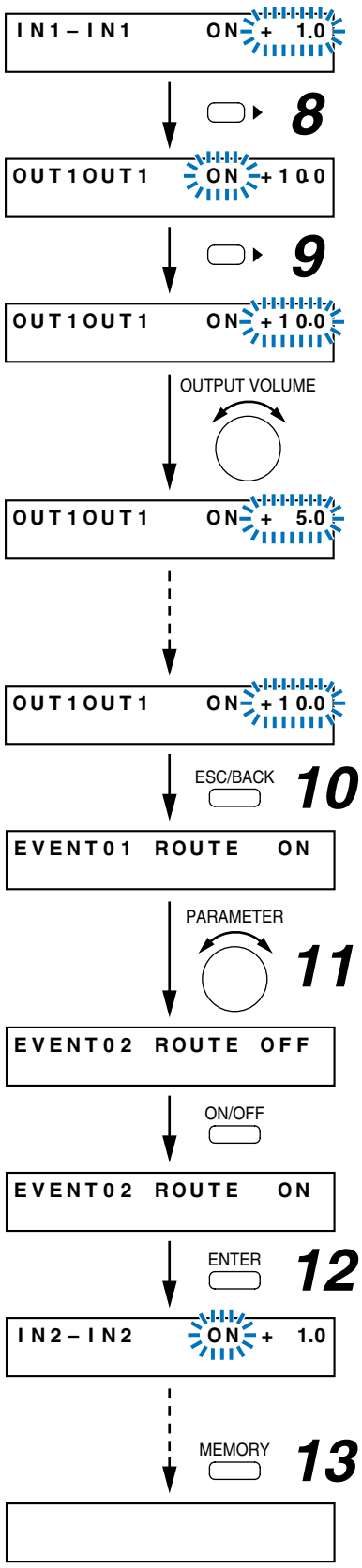
In this event, pressing the Output channel selection key permits the output channel to be selected. When multiple output channels must be changed, select all of such output channels and adjust their output volume.

**Step 10.** Return to the input gain setting screen and press the ESC/BACK key.
The display reverts to the Event number selection screen.

**Step 11.** Using the Parameter setting knob, select the Event number to be set next, then set the selected Event to ON by pressing the Input channel ON/OFF key.
* Multiple Events can be set to ON. Make their adjustments one by one.

**Step 12.** Repeat Steps 5 – 9 to adjust each parameter.

**Step 13.** After all adjustments are completed, press the Memory key to exit the adjustment mode.
The display reverts to normal operation state.

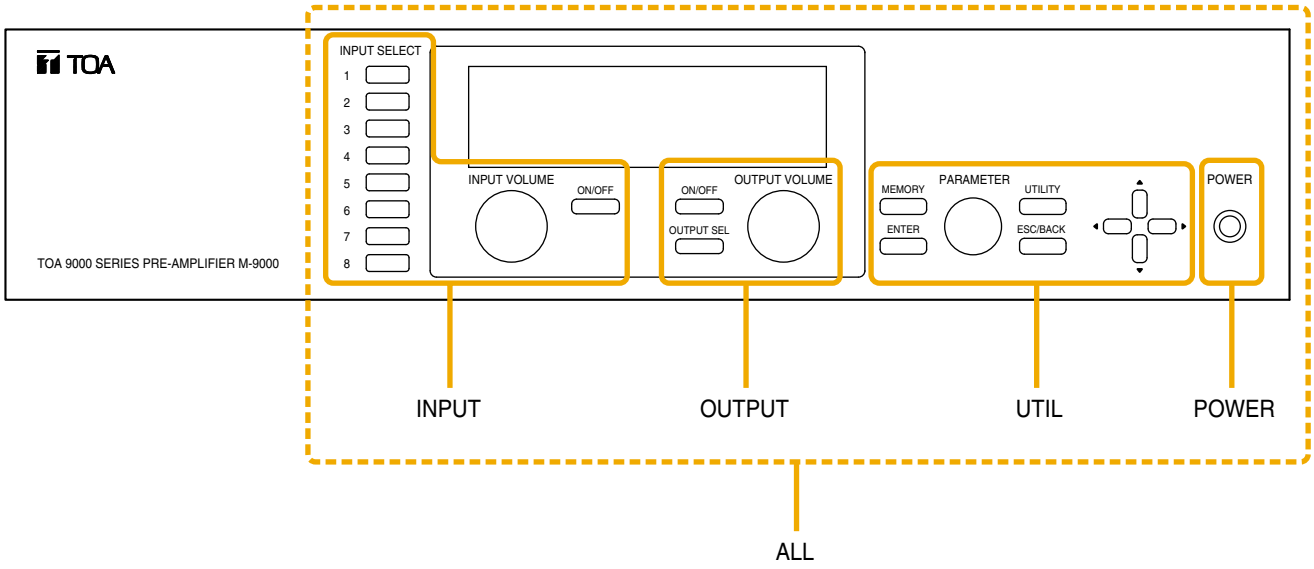


## 11.6. Key Lock Function Settings

The key lock function prevents equipment malfunctions by disabling operation of each key.

### 11.6.1. The keys that can be locked

This figure represents the M-9000.




ALL: Locks all keys simultaneously.

INPUT: Locks the Input channel selection keys, Input volume encoder, and Input channel ON/OFF key. It is also possible to individually set whether or not to lock for each channel.

OUTPUT: Locks the Output channel selection key, Output volume encoder, and Output channel ON/OFF key. It is also possible to individually set whether or not to lock for each channel.

UTIL: Locks the Utility menu key, Memory key, Enter key, Escape/Back key, Parameter setting knob, Screen shift keys.

POWER: Locks the Power switch.

### 11.6.2. Password setting

When using a password, set the password before performing lock setting for each key.

**Step 1.** Hold down the Utility menu key for 2 seconds or more in normal operation state.
The setting screen is displayed.

**Step 2.** Select KEYLOCK with the Parameter setting knob.

**Step 3.** Press the Right shift key.
Lock status is displayed.

**Step 4.** Press the Down shift key.
The Password setting screen is displayed.

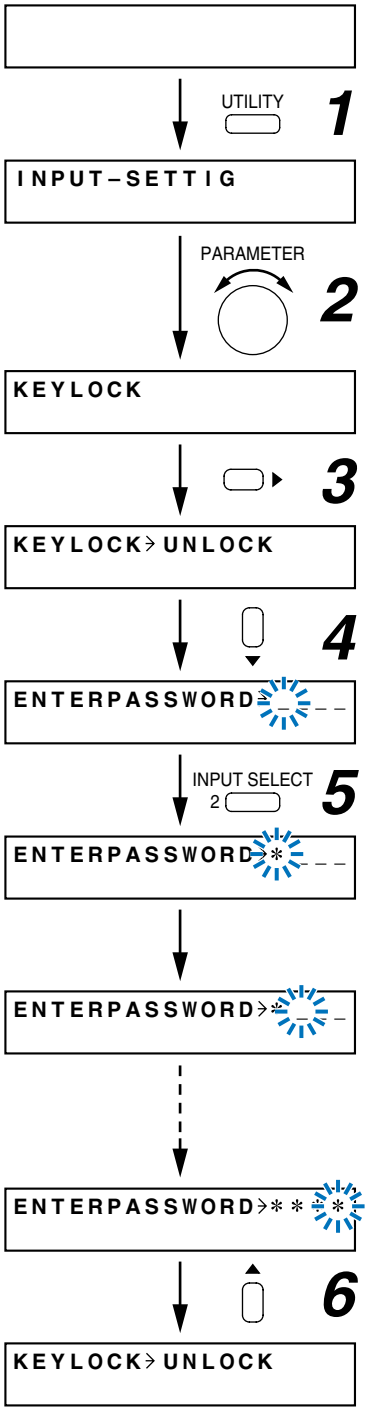
**Note**
No password is factory-preset.
(The [ _ _ _ _ ] indication is displayed.)

**Step 5.** Enter a password using the Input channel selection keys (1 – 8).
The [-] indication on the extreme left flashes first for character entry.
Entering a character changes the [-] indication into [ ✳ ].
Use up to 4 characters to set the password.

**Step 6.** Press the Up shift key after setting completion.
The display returns to the key lock status screen.

**Step 7.** Perform key lock setting.
Advance to Step 4 on the next page.

**Note**
The set password will be cleared if the display is returned to the normal operation state without performing the key lock setting.



### 11.6.3. Key lock setting operation

**Step 1.** Hold down the Utility menu key for 2 seconds or more in normal operation state.
The setting screen is displayed.

**Step 2.** Select KEYLOCK with the Parameter setting knob.

**Step 3.** Press the Right shift key.
Lock status is displayed.

**Step 4.** Press the Enter key.
The all-key lock ON/OFF setting screen is displayed.

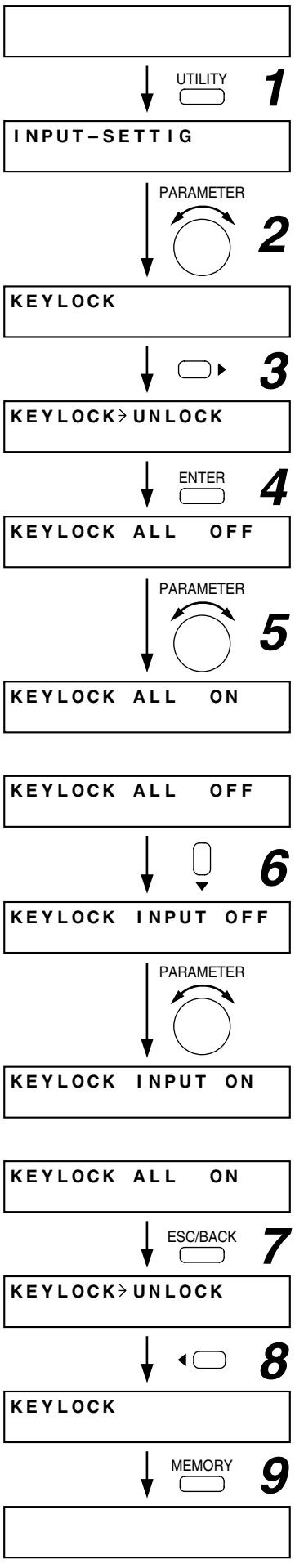
**Step 5.** Using the Parameter setting knob, perform all-key lock ON/OFF setting.

**Step 6.** To individually perform lock setting for each key, press the Shift key to display individual setting screen for each key, and perform the ON/FF setting with the Parameter setting knob.

**Step 7.** Press the shift key to return to the all-key lock setting screen after setting completion, then press the Escape/Back key.

**Step 8.** Press the Left shift key.
The display returns to the key lock status screen.

**Step 9.** Press the Memory key.
The display returns to the normal operation state, making the key lock setting valid.



### 11.6.4. Key operation when locked and key lock release

Locked keys can be temporarily operated by entering a password. Operation after entering the password differs depending on the key.

**Step 1.** Press the locked key.
The password entry screen is displayed with the flashing indication of the character entry position on the extreme left.

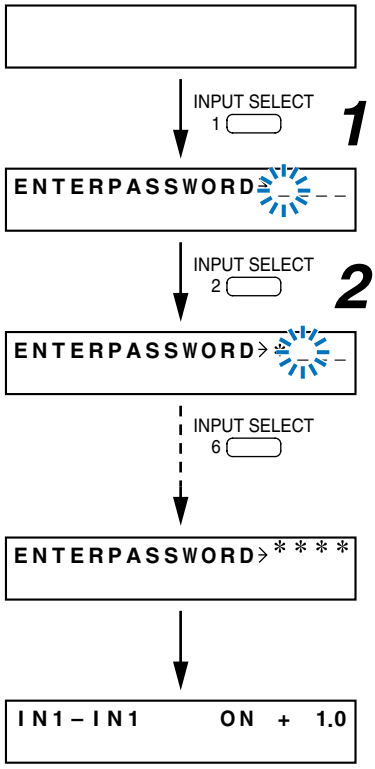
**Step 2.** Press the Enter key if no password has been set.
If the password has been set, enter it using the Input channel selection keys.

Entering a character causes the next character entry position to flash for character entry.
When the entered password is correct, the locked key is released. If the registered password is comprised of 1 to 3 characters, as soon as entered 1 to 3 characters agree with them, the locked key is released.

When released keys are those of the type related to input and output operations, they become temporarily operable, but revert to the locked state if they are left unused for 1 minute.

When utility-related keys are released, the key lock menu screen is displayed, clearing the password setting automatically.
Move to the screen for which you want to make a change. When wishing to lock the keys using the password even after the setting has been changed, set the password again.
To simultaneously release all locked keys, set the all-key lock function to OFF on the all-key lock ON/OFF setting screen.

(Example when input keys are locked)



# 12. MODULE INSTALLATION

**Important** Be sure to detach the power cord when inserting or removing any module.

## 12.1. Module Combination

The unit is designed to provide an up to 8-input/8-output configuration in combination with its optional modules.
Inputs are configured by only using the modules. (No input terminals are located on the rear panel.)
For outputs, 2 output channels are provided on the rear panel and can be expanded by adding modules.
There are 4 control inputs and 4 control outputs on the rear panel, which can be expanded to a maximum of 12 inputs and 12 outputs with the additional use of 1 module.
900 Series input modules can also be used together with 9000 Series modules.

| 9000 series modules | | No. of inputs | Maximum mountable No. |
|---|---|---|---|
| Model No. | Module function | | |
| D-001T | 2-channel Mic/Line input | 2 | 4 |
| ZP-001T | Zone paging input | 1 | 1 |
| T-001T | 2-channel output | — | 3 |
| C-001T | Remote control | — | 1 |

| 900 series modules | 1 | 8 |
|---|---|---|

## 12.2. Channel Numbers

- Input channel numbers 1, 2, 3... begin with the input(s) of the module inserted into Slot No. 1.
- Output channels 1 and 2 correspond to the unit's rear panel-mounted preamplifier output terminals 1 and 2, respectively. When output modules are added, the output channel numbers are 3, 4, 5....beginning with the output of the module inserted into Slot 5.
- Control input and output channel numbers correspond to control input and output terminals 1 – 4 on the unit's rear panel. When output is expanded using the module, the additional channel numbers are from 5 to 12.

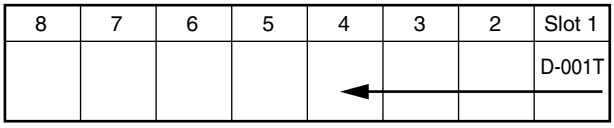
## 12.3. Module Installation

The unit's rear panel-mounted module slot numbers are 1 – 8 from right to left as viewed from the rear.
There are rules for module installation. Follow the procedures below to mount the modules.

**Notes**
- Avoid touching parts and terminals on the module's circuit board when inserting or removing the module.
- Mount the module in the right place and secure it with screws.

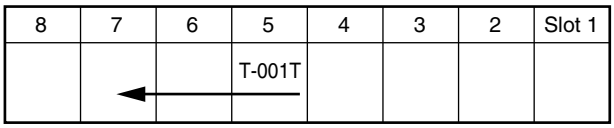
**Step 1.** Insert the D-001T module into the slots, starting in order from Slot 1 without leaving slots open in between.

**Note**
Only Slots 1 – 4 can be used for the D-001T module.

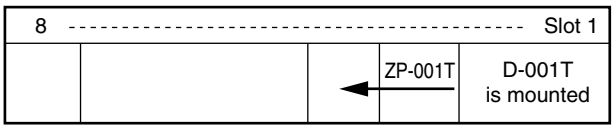



**Step 2.** Insert the T-001T module into the slots, starting in order from Slot 5 without leaving slots open in between.

**Note**
Only Slots 5 – 7 can be used for the T-001T module.



**Step 3.** Insert the ZP-001T module(s) into the slots in order without leaving slots open in between.



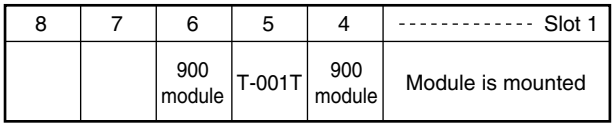

**Note**
Start the insertion from Slot No. 1 when no D-001T module is used.

(Example when no D-001T is mounted)

**Step 4.** Insert the 900 Series input modules in order without leaving slots open in between.

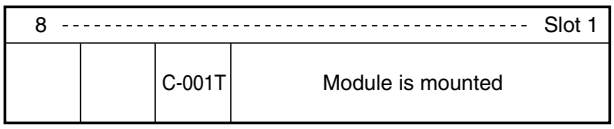
**Note**
- Use the open slots in increasing slot number order even if the T-001T module is mounted in an intermediate position.
- Insert modules into the slots, starting in order from Slot No. 1 when not mounting the D-001T and ZP-001T.

(Example when the T-001T is mounted in an intermediate position)




(Example when no D-001Tand ZP-001T are mounted)

**Step 5.** Insert the C-001T module in the open slot with the lowest slot number.




**Step 6.** Attach the blank panels supplied with the unit onto open slots.

**Note**
If modules are not correctly installed, an error indication is displayed on the VFD screen when the power is turned on. In such cases, check the above procedures again and reinsert the modules.

(Example for an error indication)

## 12.4. Module Installation Examples

**[Example of audio 8-input/8-output and control 12-input/12-output configuration]**

| Slot No. 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
|---|---|---|---|---|---|---|---|
| C-001T<br>Control<br>8 inputs<br>8 outputs | T-001T<br>Audio<br>2 outputs | T-001T<br>Audio<br>2 outputs | T-001T<br>Audio<br>2 outputs | D-001T<br>Audio<br>2 inputs | D-001T<br>Audio<br>2 inputs | D-001T<br>Audio<br>2 inputs | D-001T<br>Audio<br>2 inputs |

**[Example of audio 6-input/4-output and control 4-input/4-output configuration]**

| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
|---|---|---|---|---|---|---|---|
| Open slot<br>(Attach the blank panel) | Open slot<br>(Attach the blank panel) | 900 series module<br>Audio<br>1 input | T-001T<br>Audio<br>2 outputs | 900 series module<br>Audio<br>1 input | 900 series module<br>Audio<br>1 input | 900 series module<br>Audio<br>1 input | D-001T<br>Audio<br>2 inputs |

**[Example of audio 3-input/4-output and control 4-input/4-output configuration]**

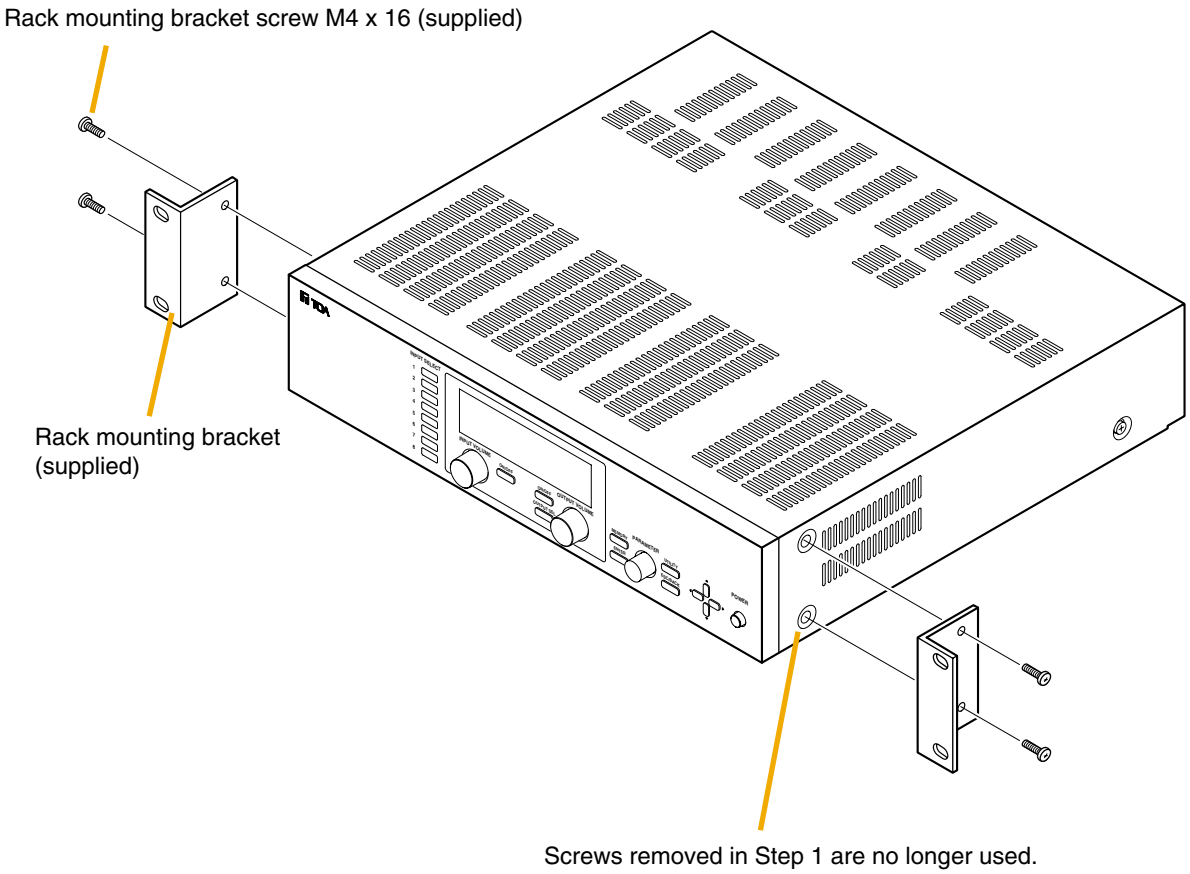
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
|---|---|---|---|---|---|---|---|
| Open slot<br>(Attach the blank panel) | Open slot<br>(Attach the blank panel) | Open slot<br>(Attach the blank panel) | T-001T<br>Audio<br>2 outputs | Open slot<br>(Attach the blank panel) | 900 series module<br>Audio<br>1 input | 900 series module<br>Audio<br>1 input | ZP-001T<br>Audio<br>1 input |

# 13. RACK MOUNTING BRACKET ATTACHMENT

Use the supplied rack mounting bracket when mounting the unit in an equipment rack.

**Step 1.** Remove four M4 x 8 screws on the sides.
The removed screws are no longer used.

**Step 2.** Attach the rack mounting bracket to the unit using the supplied four M4 x 16 rack mounting bracket mounting screws.

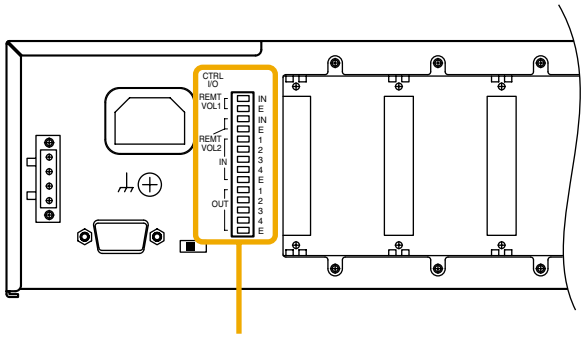



**Notes**

- Remove 4 plastic feet on the bottom surface when mounting the unit in a rack.
- Rack mounting screws are not supplied with the unit. Use the screws that are appropriate for the rack.

# 14. CONNECTIONS

## 14.1. Control I/O Terminal Connections




Control-I/O connection terminal

### 14.1.1. Remote volumes 1, 2

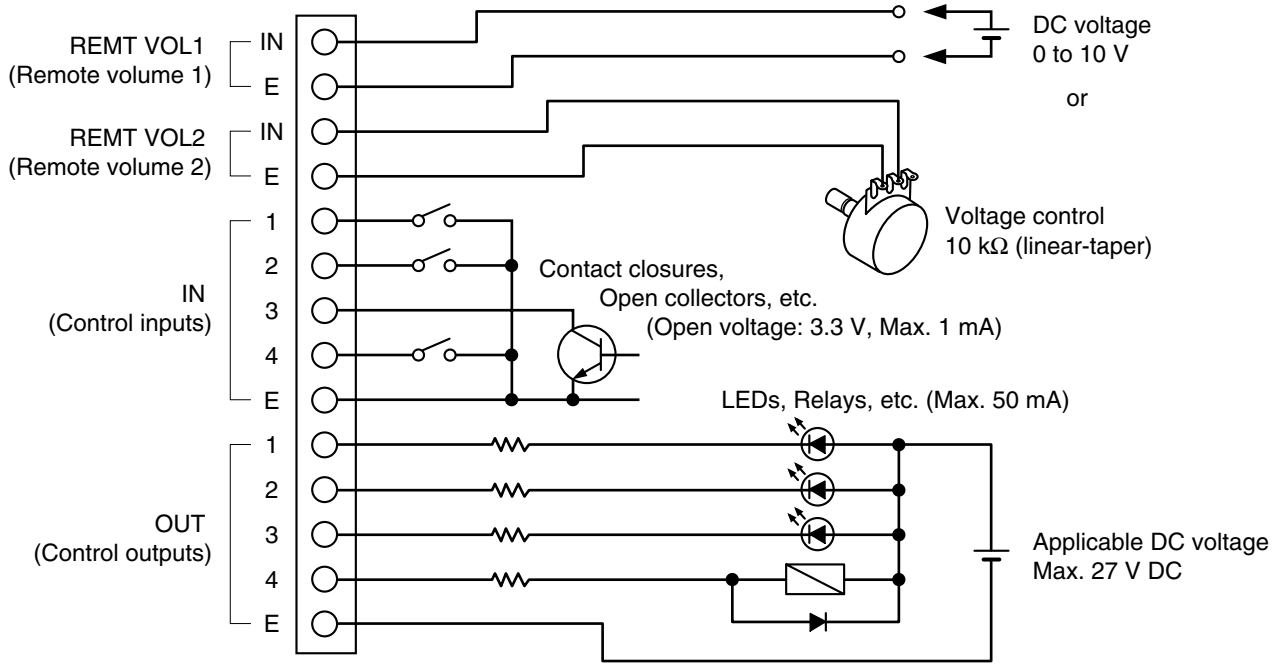
Volume of the input or output channels can be remotely adjusted. (The REMT VOL 1 terminal is factory-preset to output 1, and the REMT VOL 2 to output 2.)
Connect a 10 kΩ (linear taper) variable resistor as shown below or input the DC voltage of 0 to +10 V.
The larger the variable resistor resistance, the larger the volume.

### 14.1.2. Control inputs 1 – 4

Connect switch contacts, etc. to these terminals.
Open voltage is 3.3 V, and the short-circuit current is 1 mA or less.

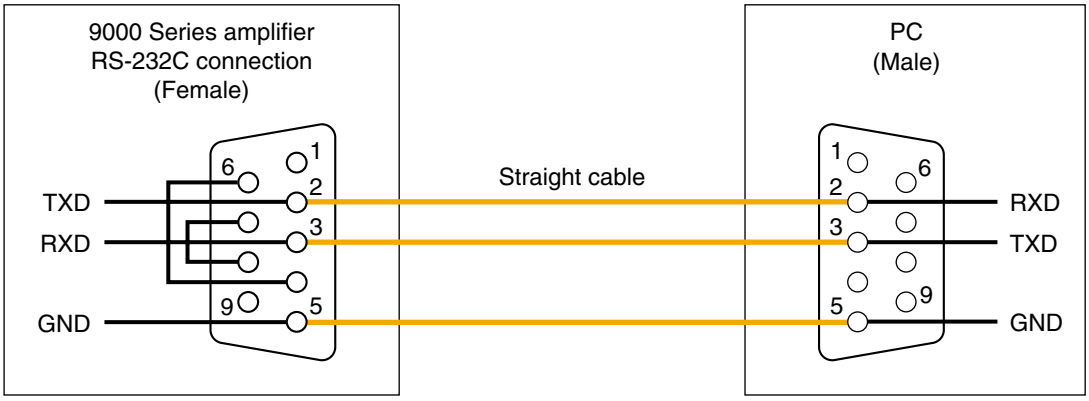
### 14.1.3. Control outputs 1 – 4

Use these terminals to activate LEDs, relays, and other external equipment.
Maximum operating current is 50 mA, and the maximum applicable voltage is +27 V.



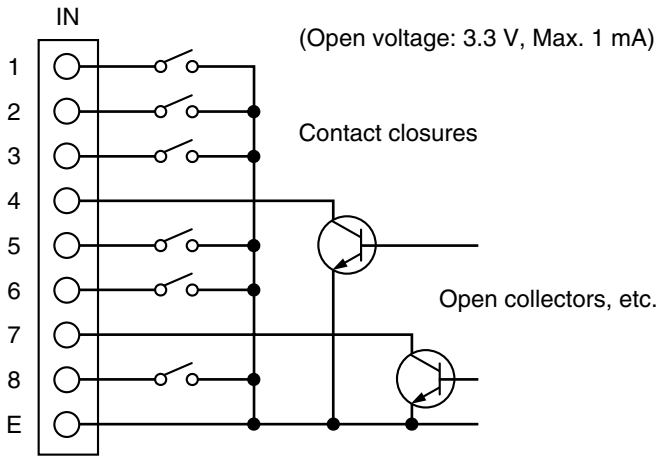
## 14.2. RS-232C Connector Connection

Use the straight cable when connecting a PC to the unit's RS-232C connector (9P, female).

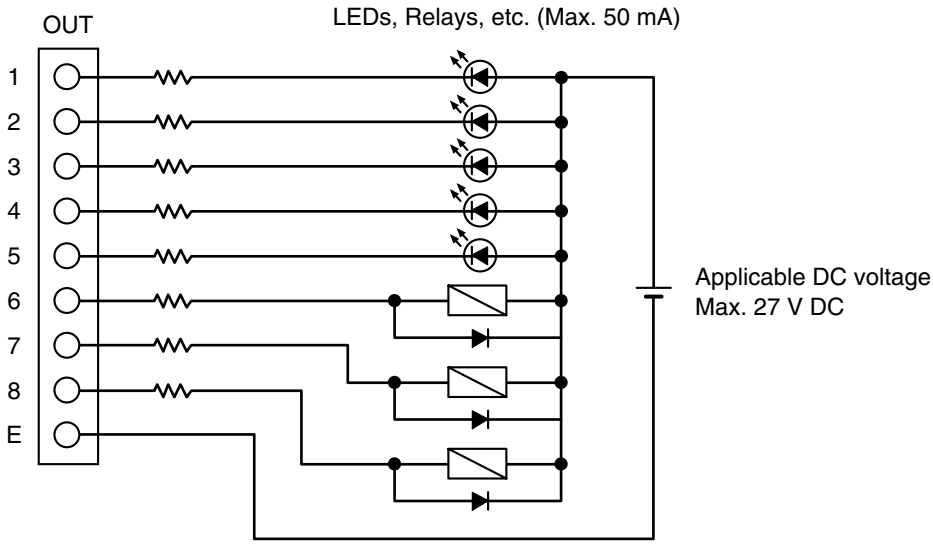



## 14.3. C-001T Module Connections

### 14.3.1. Control input terminal




### 14.3.2. Control output terminal



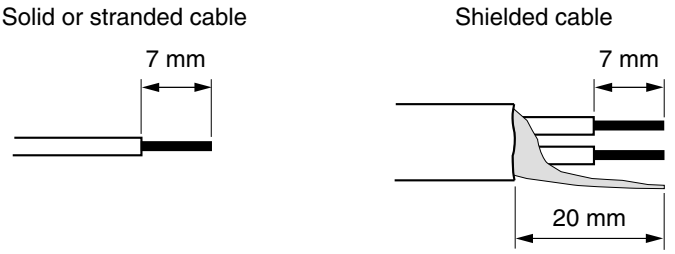
## 14.4. Removable Terminal Plug Connection

Be sure to use the supplied removable terminal plugs for connections to the removable terminal blocks.

**Cautions**

- Be sure to use shielded cables for audio signal lines.
- Avoid soldering stranded or shielded cable, as contact resistance may increase when the cable is tightened and the solder is crushed, possibly resulting in an excessive rise in joint temperatures.

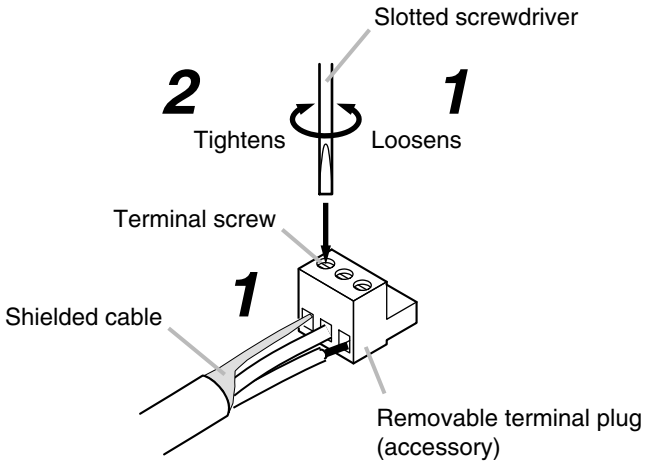
**Cable end treatment**




**Connector connection**

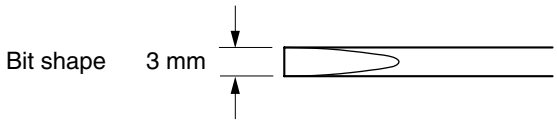
**Step 1.** Loosen the terminal screw, then insert the cable.

**Step 2.** Retighten the terminal screw. (Pull on the cable to ensure it is securely connected.)




**Tip**

Recommended slotted screwdriver type: Screwdriver with 3 mm blade width



# 15. RESTORING FACTORY DEFAULT SETTING

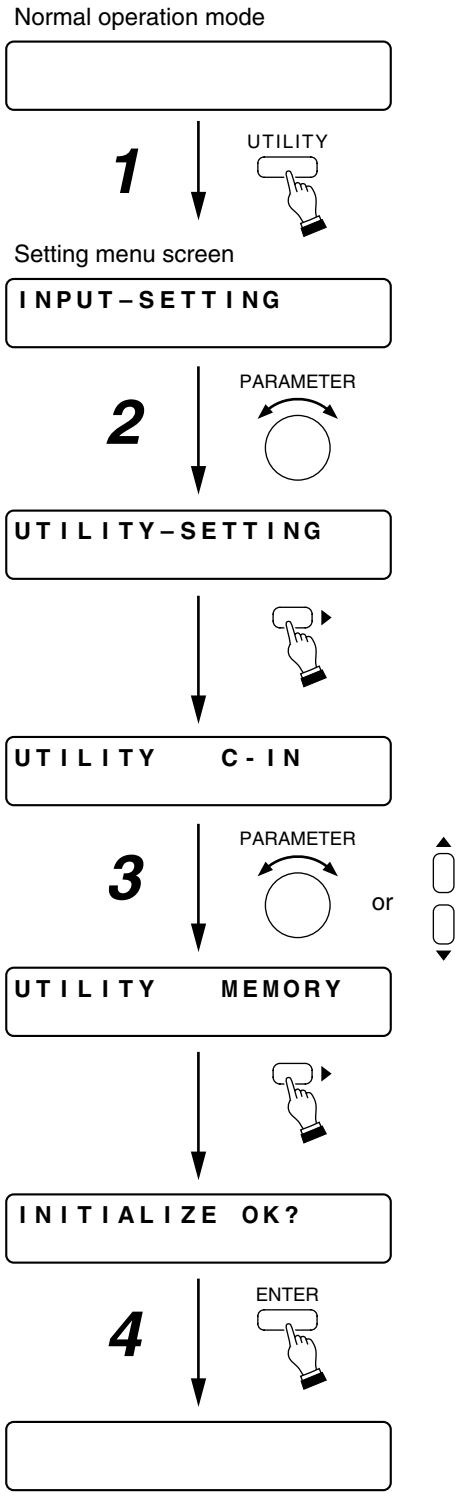
Follow the procedures below to return all settings to default values while using the unit in the matrix mode. Details of the default values are shown on p. 70 "SETTING ITEMS AND SETTING RANGES."

**Step 1.** Hold down the Utility menu key for 2 seconds or more when in normal operation mode.

**Step 2.** Using the Parameter setting knob, select UTILITY SETTING, then press the Right shift key.

**Step 3.** Using the Parameter setting knob or UP/Down shift key, select MEMORY, then press the Right shift key.

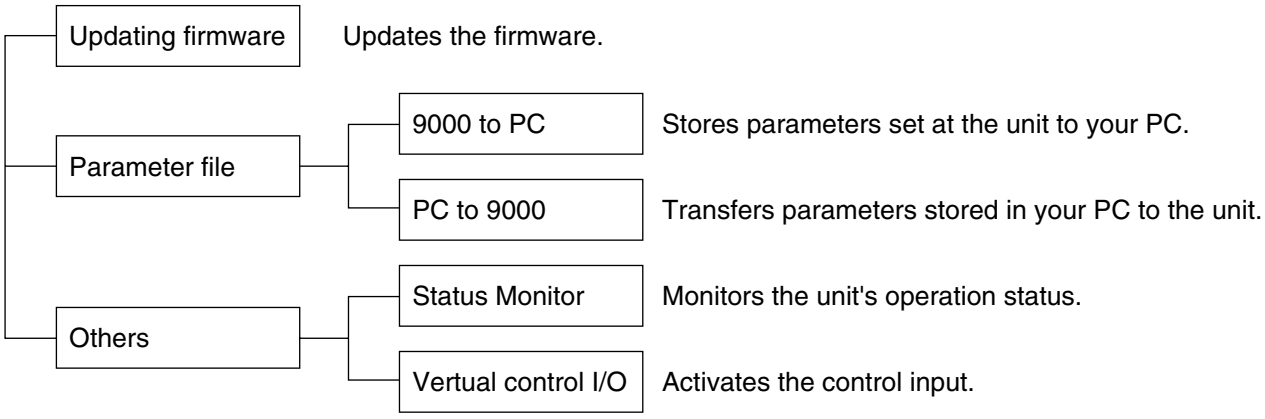
**Step 4.** Press the Enter key when the "INITIALIZE OK?" indication is displayed.



# 16. HOW TO USE THE SUPPLIED SOFTWARE

## 16.1. General Description

The supplied CD-ROM contains the A-9000 series maintenance software, which executes the following utility programs.




**[System requirements]**

Ensure your PC operates on Windows XP and also meets the following requirements, or this software will not run properly.

Serial port: RS-232C port or compatible with USB-to-RS232C converter
Media & Drive: CD-ROM

**Note:** Windows is a trademark of Microsoft Corporation.

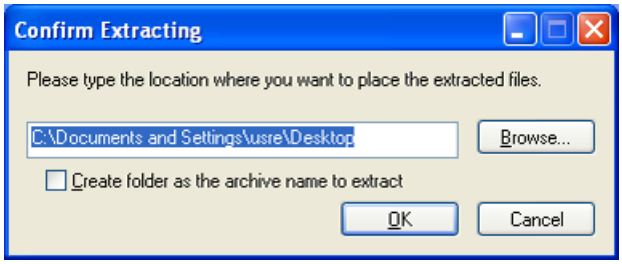
## 16.2. Installing the Software

**Step 1.** Load the supplied CD-ROM into the PC's CD-ROM drive.

**Step 2.** Double-click the "setup_a9k.exe" icon in the software folder.

**Step 3.** Designate the folder into which the 9000 series maintenance software is extracted, and click the "OK" button.

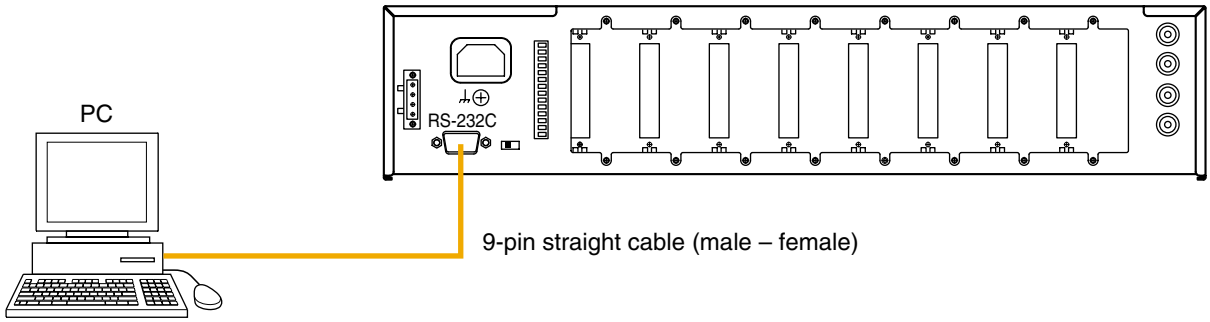
**Note**
After installation completion, only the software icon is created in the folder designated in the screen at right. The software execution file is moved into the automatically created C:/ProgramFiles/TOA folder after being extracted.


Confirm Extracting
Please type the location where you want to place the extracted files.
C:\Documents and Settings\usre\Desktop
Browse...
Create folder as the archive name to extract
OK
Cancel

**Step 4.** After installation completion, confirm the "MaintCtrl.exe" icon is created in the folder designated in Step 3.

## 16.3. Connecting the Unit to the PC

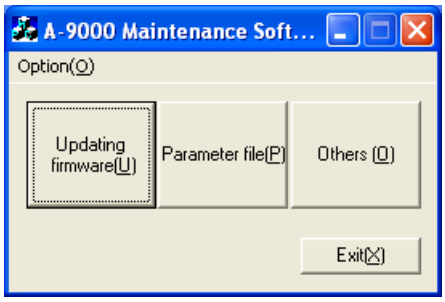
Connect the unit's RS-232C port and the PC's RS-232C port with a 9-pin straight cable (male - female).



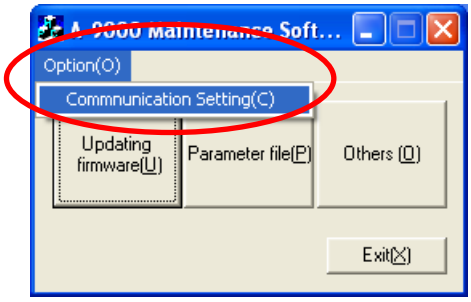
## 16.4. Setting the Communication Port and Speed

Set the PC's communication port and speed according to the procedure below.

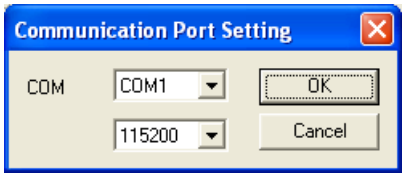
**Step 1.** Double-click the "MaintCtrl.exe" icon to run the 9000 series maintenance software.
The screen at right is displayed.




**Step 2.** Pull down the menu from the "Option" button and select "Communication Setting."




The screen at right is displayed.

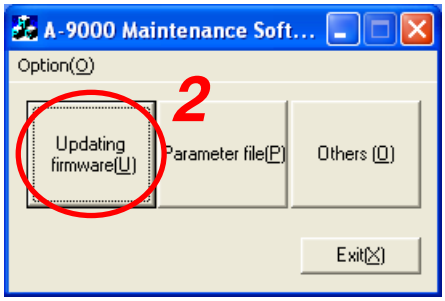



**Step 3.** Select the communication port and speed to match the connected PC.
Then, click the "OK" button.
The COM port is factory-preset to "COM1" and the communication speed to "115200."

## 16.5. Updating the Firmware

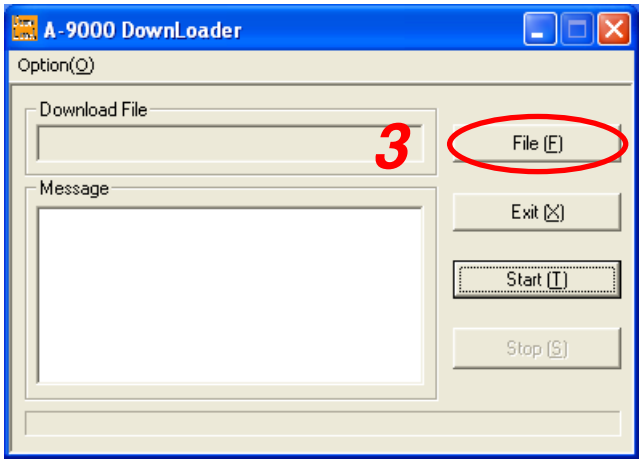
Our latest A-9000 firmware is made available on our product information download site (http://www.toa-products.com/international/). You can also obtain the latest version by downloading it.

**Step 1.** Double-click the "MaintCtrl.exe" icon to run the 9000 series maintenance software.
The screen at right is displayed.

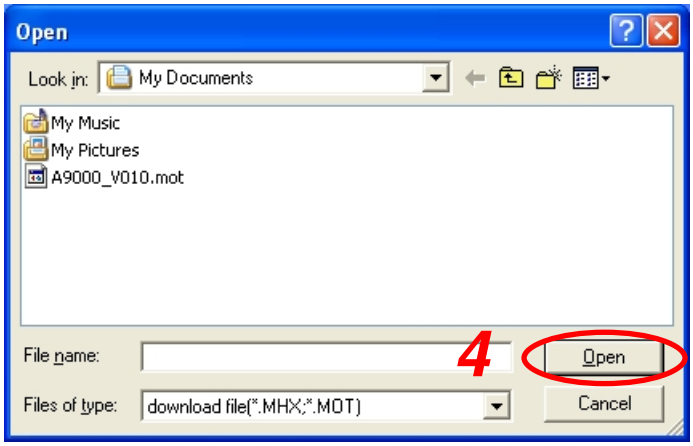



**Step 2.** Click the "Updating firmware" button.
The window at right opens.
The communication status is displayed in the "Message" box.

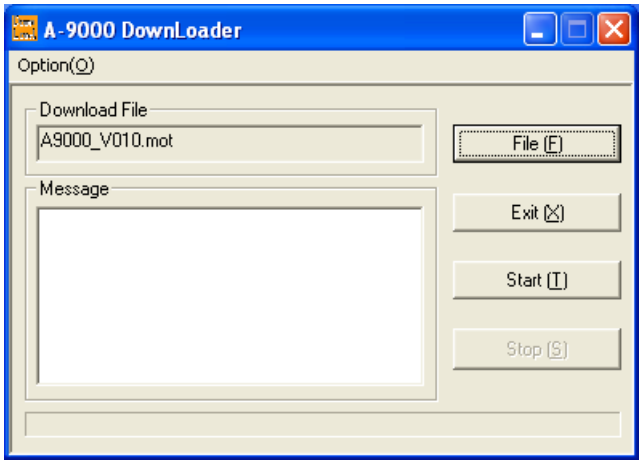
**Tip**
You can also set the communication port here when pressing the "Option" button on the menu bar to select "Communication Setting."




**Step 3.** Click the "File" button.
The window at right opens.



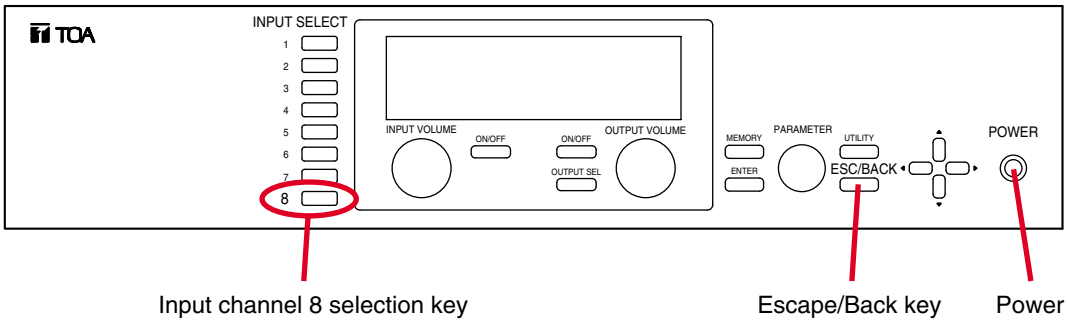

**Step 4.** Select the file, then click the "Open" button.
The selected download file is entered in the "Download File" box.



**Step 5.** Perform the following key operations at the unit to make the unit ready for data reception from the PC.

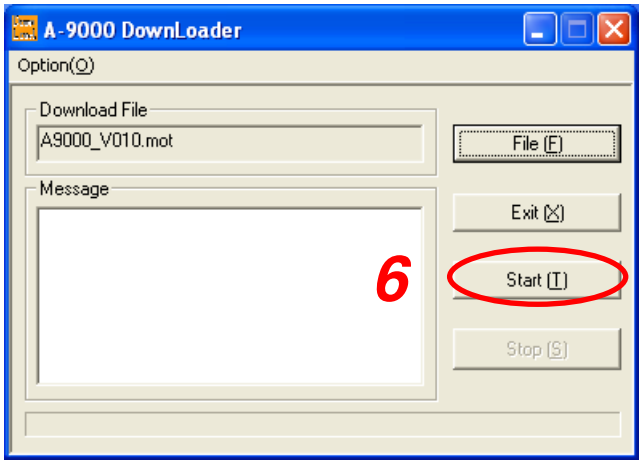
**5-1.** Turn the power switch off.

**5-2.** Press the Input channel 8 selection key, Escape/Back key, and Power switch at the same time.

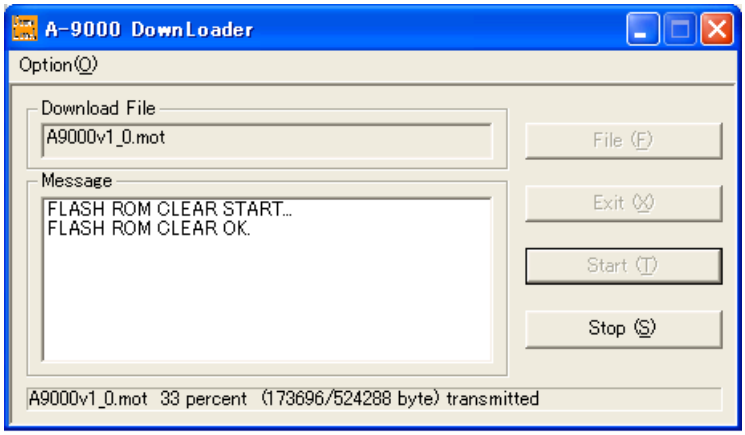



Input channel 8 selection key　　Escape/Back key　　Power switch

**Step 6.** Click the "Start" button to start the firmware file transfer.




The window at right opens.

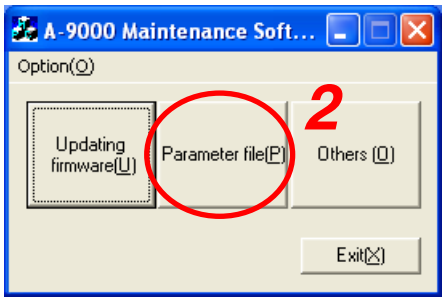



**Step 7.** Click the "Exit" button to terminate the program after download completion.
The screen returns to the initial menu screen in Step 1.

## 16.6. Storing or Recalling Parameters Set at the Unit

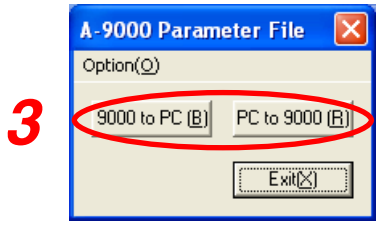
You can back up the parameters set at the unit to your PC, or transfer the parameters stored in your PC to the unit.

**Step 1.** Double-click the "MaintCtrl.exe" icon to run the 9000 series maintenance software.
The screen at right is displayed.

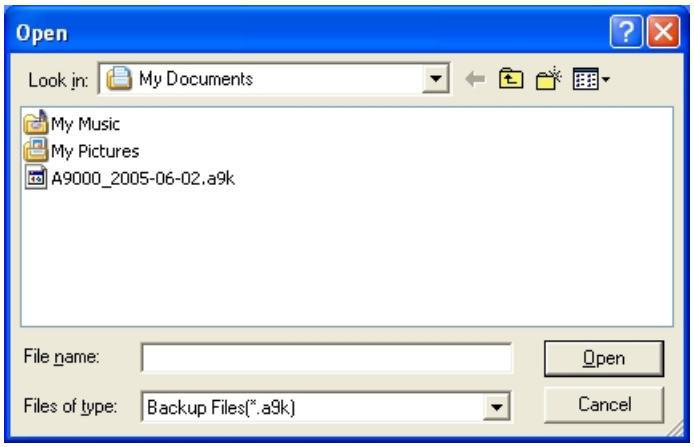



**Step 2.** Click the "Parameter file" button.
The window at right opens.

**Tip**
You can also set the communication port and speed here when pressing the "Option" button on the menu bar to select "Communication Setting."



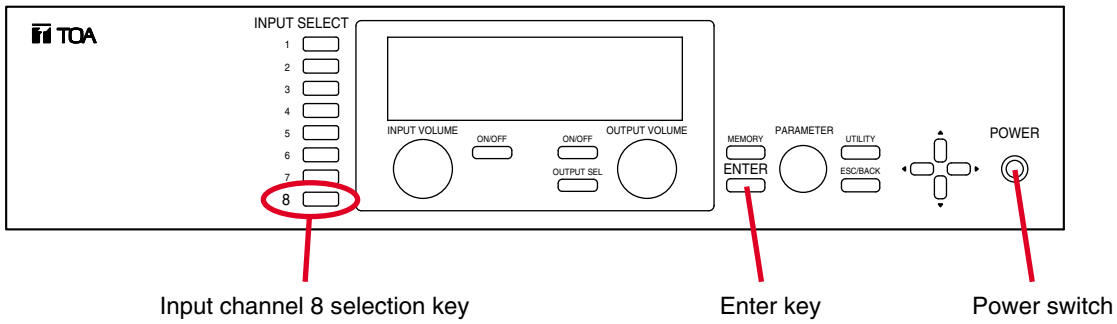

**Step 3.** Click the "9000 to PC" button when storing parameters set at the unit to your PC, while click the "PC to 9000" button to transfer parameters stored in your PC to the unit.
The window at right opens.



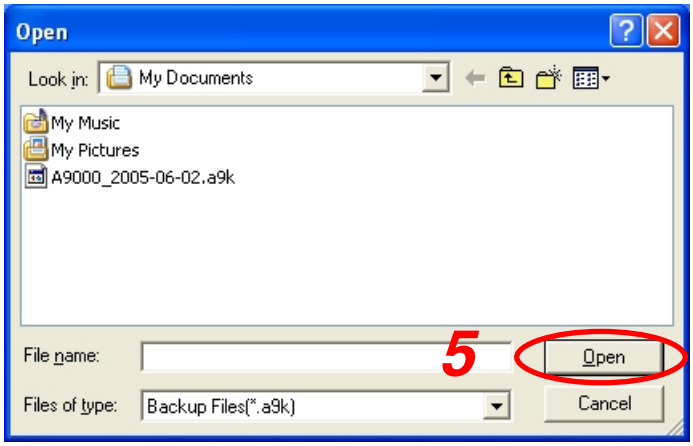

**Step 4.** Perform the following key operations at the unit to permit data transmission/reception between the unit and the PC.

**4-1.** Turn the power switch off.

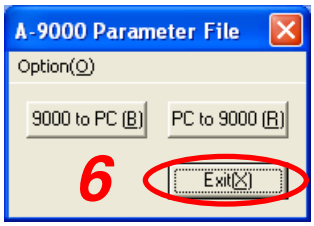
**4-2.** Press the Input channel 8 selection key, Enter key, and Power switch at the same time.



**Step 5.** Select the file, then click the "Open" button.
The set parameters are transferred from the unit to the PC or from the PC to the unit.



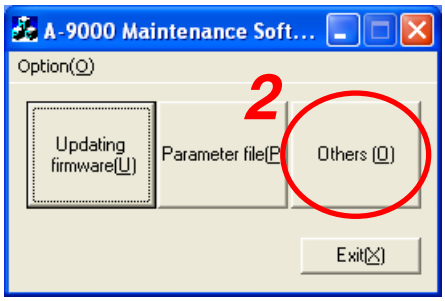
**Step 6.** Click the "Exit" button to terminate the program after data transmission completion.
The screen returns to the initial menu screen in Step 1.



## 16.7. Monitoring the Unit's Operation Status

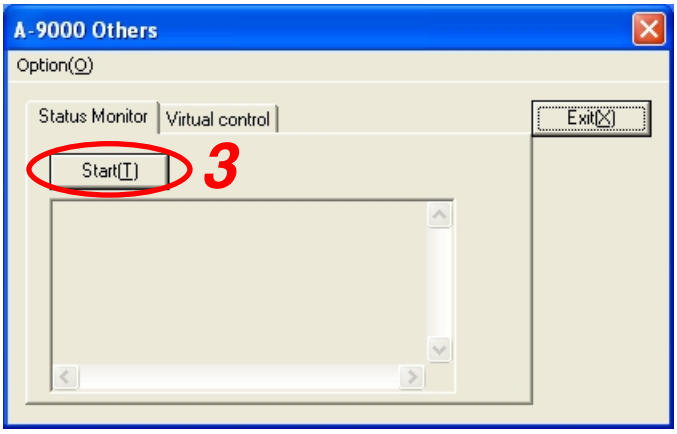
The operation status of the unit can be monitored in real time.

**Step 1.** Double-click the "MaintCtrl.exe" icon to run the 9000 series maintenance software.
The screen at right is displayed.

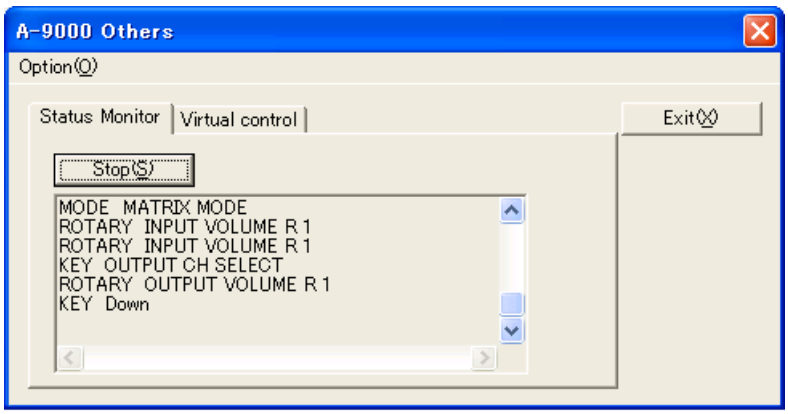



**Step 2.** Click the "Others" button.
The window at right opens.

**Tip**
You can also set the communication port and speed here when pressing the "Option" button on the menu bar to select "Communication Setting."




**Step 3.** Click the "Start" button.
Operation status such as the unit's key or knob actions is displayed in real time.

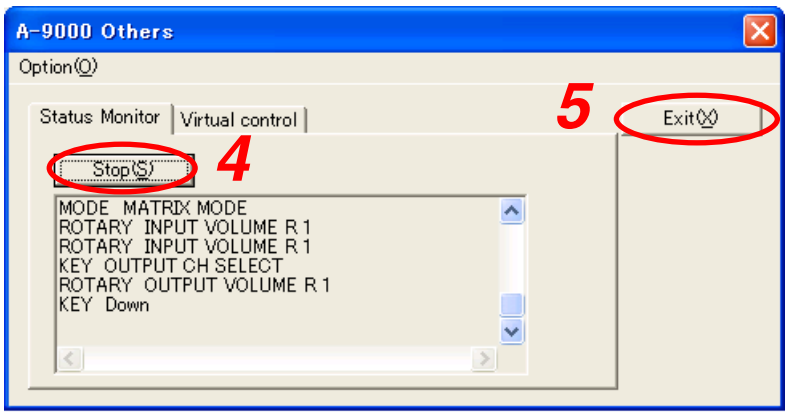



**[Screen indications and their descriptions]**

| Indication | Description |
|---|---|
| KEY INPUT SELECT 1 | INPUT SELECT 1 key has been pressed. |
| KEY POWER long | Power switch has been pressed long. |
| KEY UTILITY & ESC/BACK | UTILITY key and ESC/BACK key have been pressed at the same time. |
| ROTARY INPUT VOLUME L 1 | INPUT VOLUME encoder has been turned one click counterclockwise. |
| CIN CONTROL INPUT 2 (ON) | Control input 2 terminal has been turned on. |
| MATRIX MODE | Unit is operating in matrix mode. |
| POWER ON | Power has been turned on. |

**Step 4.** To stop monitoring, click the "Stop" button.

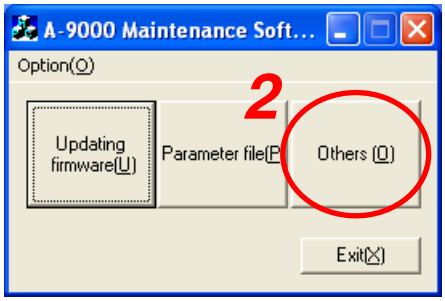
**Step 5.** Click the "Exit" button to terminate the program.
The screen returns to the initial menu screen in Step 1.



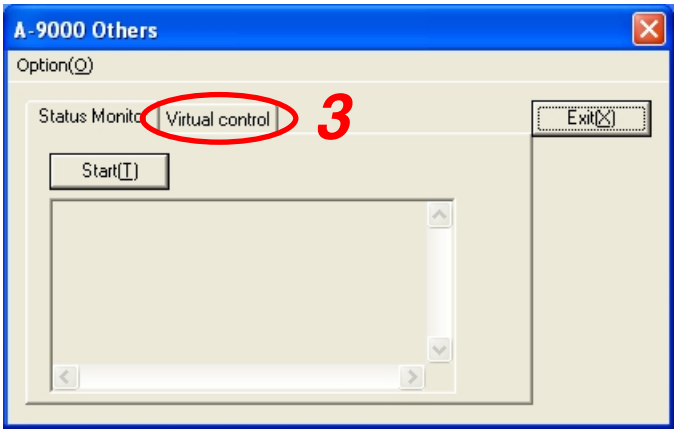
## 16.8. Activating the Control Input

The unit's control input can be activated through PC operation.

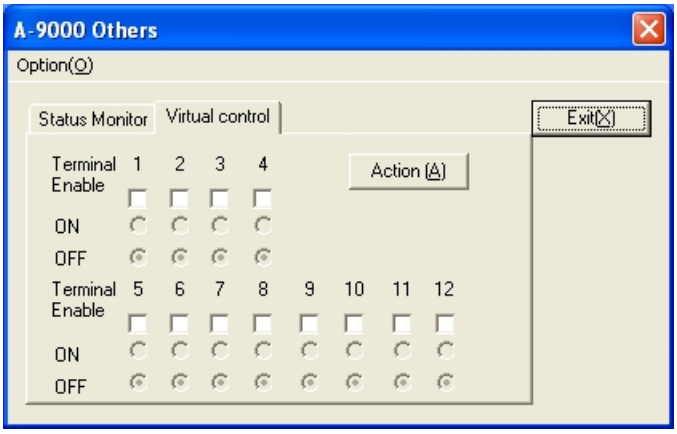
**Step 1.** Double-click the "MaintCtrl.exe" icon to run the 9000 series maintenance software.
The screen at right is displayed.




**Step 2.** Click the "Others" button.
The window at right opens.



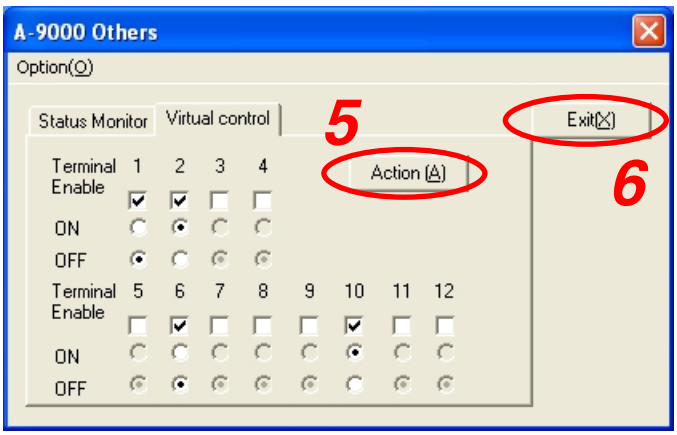

**Step 3.** Click the "Virtual control" tab.
The window at right opens.
Terminal 1 – 12 represent the control input terminal numbers.




**Step 4.** Tick the "Enable" boxes of the control inputs you want to activate, then select either ON or OFF.

**Step 5.** Click the "Action" button.
The Control inputs set to ON are activated.

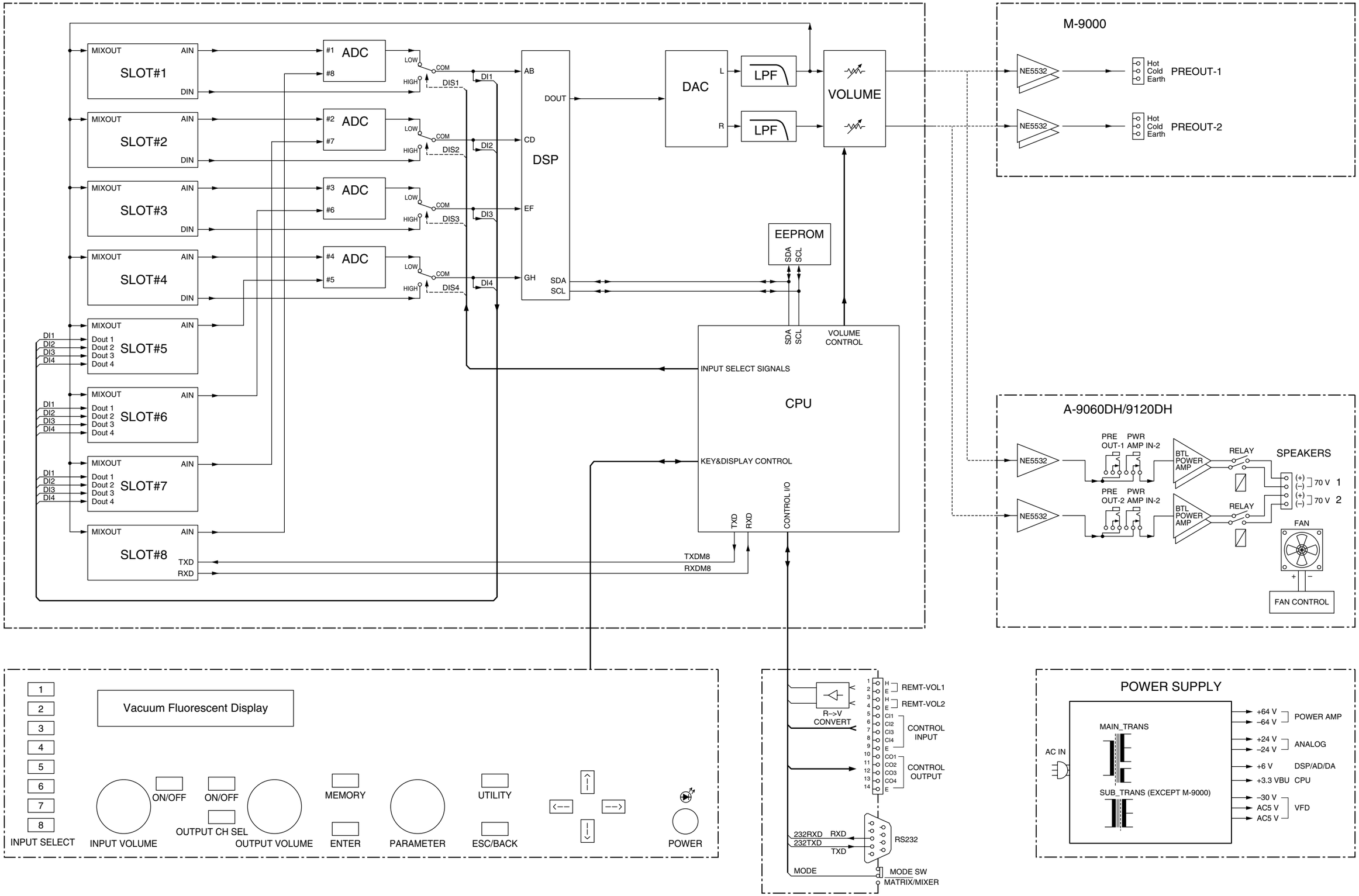
**Step 6.** Click the "Exit" button to terminate the program.
The screen returns to the initial menu screen in Step 1.



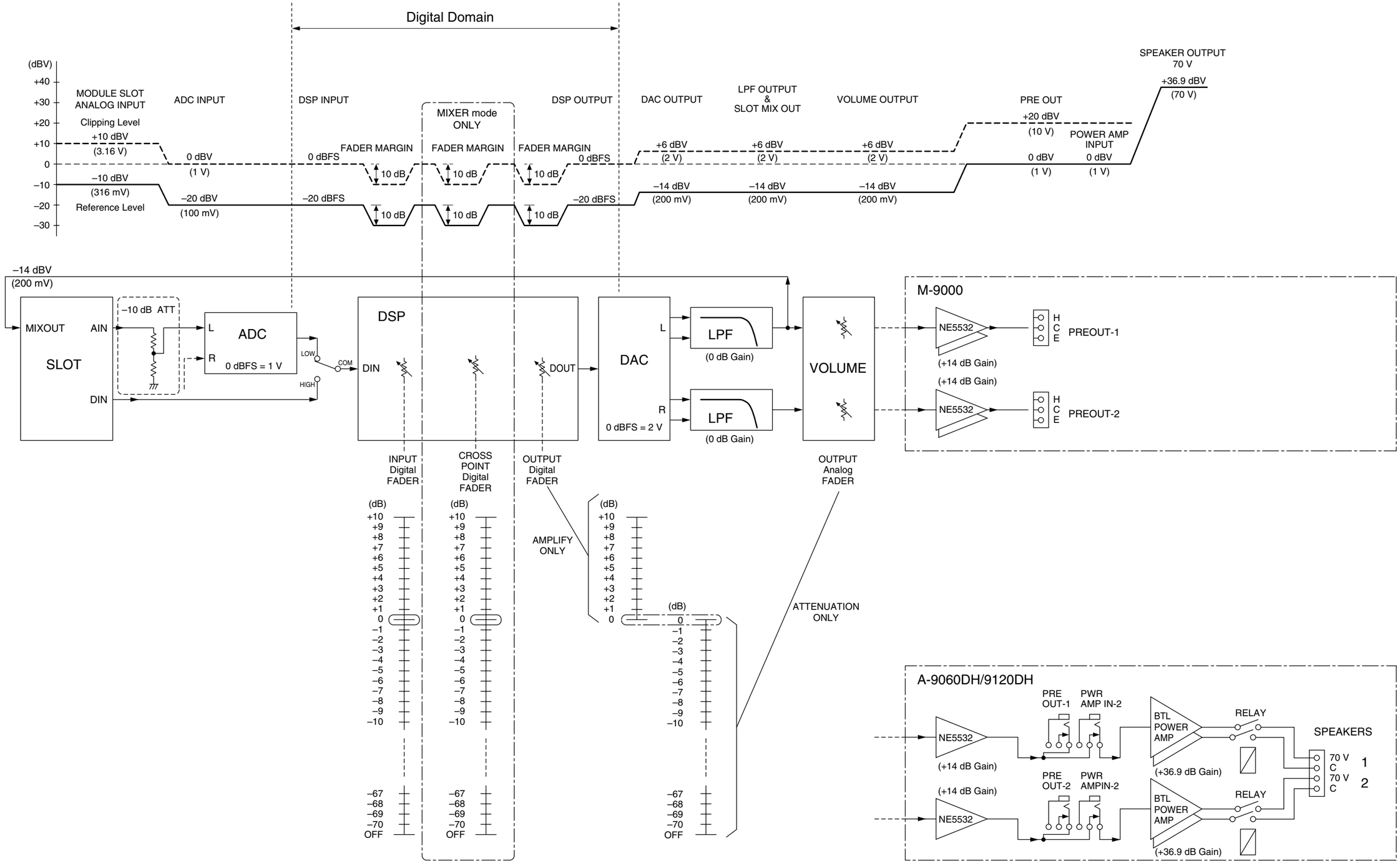
# 17. ERROR INDICATIONS

| Error indications | Remedy |
|---|---|
| MODULE TYPE ERROR | A module is mounted in a wrong position. Confirm that each module is mounted in a correct position, and correctly re-mount the module mounted in a wrong position. (Refer to p. 50.) |
| RAM ERROR | There may be a failure. Consult your TOA dealer. |
| DSP1 COMM ERROR | |
| EEPROM ERROR | |
| SERIAL ERROR | |
| SLOT COM TYPE ERROR | |

# 18. BLOCK DIAGRAM



# 19. LEVEL DIAGRAM



# 20. SETTING ITEMS AND SETTING RANGES

The following tables show the setting items and setting ranges in the matrix mode.

**Note:** Underlined parameters are factory-preset.

## 20.1. Audio Input Settings

| Setting Item | Setting Range |
|---|---|
| Priority | 1 – 8 |
| Ducker | ON, OFF |
| Input Channel Name | 7 characters (IN1 – 8) |

**[Settings when the ZP-001T is used]**

| | |
|---|---|
| Pre-paging Tone | ON, OFF |
| Output Format | OUTPUT |
| Operation Mode | RING SIGNAL, PAGING PORT |

**[Settings when the D-001T is used]**

| | |
|---|---|
| Input Sensitivity | –60 dB, –54 dB, –48 dB, –42 dB, –36 dB, –30 dB, –24 dB, –18 dB, –10 dB |
| Phantom Power | ON, OFF |
| VOX Function | ON, OFF |

## 20.2. Audio Output Settings

| Setting Item | Setting Range |
|---|---|
| Output Channel Name | 7 characters (OUT1 – 8) |

## 20.3. Event Settings

| Setting Item | Setting Range |
|---|---|
| Event Number | 01 – 32 |
| Event Classification | NONE, ROUTE, BGMEND, BASE |

**[When Event classification is set to ROUTE]**

| Setting Item | Setting Range |
|---|---|
| Input Channel | 1 – 8 |
| Output Channel | 1 – 2 (Max. 8 when the 3 T-001Ts are used)<br>(2 or more channels selectable, all channels selected by default) |
| Trigger | NONE, VOX, C-IN01 – 04 (01 – 12 when the C-001T is used) |
| Interlock Control Output | ON, OFF |
| Interlock Output<br>(When the interlock control output is ON) | 01 – 04 (01 – 12 when the C-001T is used) |

**[When Event classification is set to BASE]**

| Setting Item | Setting Range |
|---|---|
| Event Number | 01 – 32<br>(Including only Event numbers where broadcasts from input channels having priority 8 are set) |
| Trigger | NONE, C-IN01 – 04 (01 – 12 when the C-001T is used) |

**[When Event classification is set to BGMEND]**

| Setting Item | Setting Range |
|---|---|
| Trigger | C-IN01 – 04 (01 – 12 when the C-001T is used) |

## 20.4. Utility Settings

| Setting Item | Setting Range |
|---|---|
| Function Selection | C-IN (control input), C-OUT (control output), POWEROFF, RS232C, MODULE, PRIORITY, REMOTE (remote volume), EVENT (Event activation at power-on), VERSION, MEMORY (memory initialization) |

**[When the function selection is set to C-IN]**

| Setting Item | Setting Range |
|---|---|
| Control Input Number | 01 – 4 (01 – 12 when the C-001T is used, excluding the control inputs set for Event trigger) |
| Control Input Function Selection | NONE, VOLUP (volume up), VOLDOWN (volume down), MUTE, POWER, EMG-MUTE (Cut-off by Emergency control) |
| Interlock Control Output (When the control input function is set to VOLUP or VOLDWN only) | ON, OFF |
| Interlock Control Output (When the interlock control output is ON) | 01 – 04 (01 – 12 when the C-001T is used) |

**[When the function selection is set to C-OUT]**

| Setting Item | Setting Range |
|---|---|
| Control Output Number | 01 – 04 (01 – 12 when the C-001T is used, excluding the control outputs set for Event trigger) |
| Control Output Function Selection | NONE, POWER |

**[When the function selection is set to POWEROFF]**

| Setting Item | Setting Range |
|---|---|
| Memory Storage at Power-Off | DEL, SAVE |

**[When the function selection is set to RS232C]**

| Setting Item | Setting Range |
|---|---|
| Communication Speed (bps) | 115.2k, 57.6k, 38.4k, 19.2k, 9.6k |

**[When the function selection is set to MODULE]**

| Setting Item | Setting Range |
|---|---|
| Slot Number | 1 – 8 |
| Module Classification | OTHERS, B-01, B-11, B-21, B-41, E-03, E-04, E-05, E-06, E-07, L-01, L-11, L-41, M-01, M-03, M-11, M-21, M-41, M-51, M-61, S-01, S-02, S-04, T-01, T-02, T-12, U-01, U-03, U-11, U-12, U-13, U-14, U-21, U-43, U-61, V-01 |

**[When the function selection is set to PRIORITY]**

| Setting Item | Setting Range |
|---|---|
| Priority | FIFO, LIFO, MIX |

**[When the function selection is set to REMOTE]**

| Setting Item | Setting Range |
|---|---|
| Remote Volume Terminal Number | REMOTE1, REMOTE2 |
| Remote Volume Control Channel | OFF, INPUT1 – 8, OUTPUT1 – 2 (Max. 8 when 3 T-001Ts are used) (Default: REMOTE1 terminal for OUTPUT1 control, REMOTE2 terminal for OUTPUT2 control) |

**[When the function selection is set to EVENT]**

| Setting Item | Setting Range |
|---|---|
| Event Activation at Power-On | 1 – 32, LAST (including only Events set for ROUTE or BASE) |

**[When the function selection is set to VERSION]**

Displays the firmware version number.

**[When the function selection is set to MEMORY]**

Restore all current settings to the default settings.

## 20.5. Adjustment Mode Settings

### Input Channel Settings

| Setting Item | Setting Range |
|---|---|
| Input Channel Selection | 1 – 8 |
| Channel Control | ON, OFF |
| Channel Gain | –∞, –70 dB to +10 dB (default setting for 0.0 dB), 0.5 dB steps |
| Ducker Attenuation Level | –∞, –50 dB, –40 dB, –30 dB, –20 dB, –10 dB, 0 dB |

**[Settings when the D-001T is used]**

| | |
|---|---|
| BASS/TREBLE | –12 dB to +12 dB (default setting for 0 dB) 1 dB step |
| Loudness Compensation | ON, OFF |
| EQ | ON, OFF |
| EQ Band Number | 01 – 10 |
| Gain | –12 dB to +12 dB (default setting for 0 dB) 1 dB step |
| Q | 0.3, 0.5, 0.7, 1, 1.5, 2, 3, 5 |
| Center Frequency | 20, 25, 31.5, 40, 50, 63, 80, 100, 125, 160, 200, 250, 315, 400, 500, 630, 800, 1 k, 1.25 k, 1.6 k, 2 k, 2.5 k, 3.15 k, 4 k, 5 k, 6.3 k, 8 k, 10 k, 12.5 k, 16 k, 20 kHz |
| HPF | OFF, 20, 25, 31.5, 40, 50, 63, 80, 100, 125, 160, 200, 250, 315, 400 Hz |
| LPF | OFF, 4 k, 5 k, 6.3 k, 8 k, 10 k, 12.5 k, 16 k, 20 kHz |
| Compressor | OFF, 0, 1, 2, 3, 4, 5 |
| VOX Sensitivity | –40, –35, –30, –25, –20, –15, –10, –5 dB |

### Output Channel Settings

| | |
|---|---|
| Output Channel Selection | 1 – 2 (Max. 8 when the 3 T-001Ts are used) |
| Channel Control | ON, OFF |
| Channel Gain | –∞, –70.0 dB to +10.0 dB, 0.5 dB steps (default setting for 0.0 dB) |
| BASS/TREBLE | –12 dB to +12 dB (default setting for 0 dB) 1 dB step |
| Loudness Compensation | ON, OFF |
| Speaker Parameter Presetting<br><br>**Note**<br>For each speaker EQ setting, refer to the next page. | OFF, F-122, F-122SUBWFER (F-122 with a subwoofer),<br>H-1, H-1SUBWOOFER (H-1 with a subwoofer),<br>H-2, H-2SUBWOOFER (H-2 with a subwoofer),<br>H-3, H-3SUBWOOFER (H-3 with a subwoofer),<br>HB-1, FB-100, SW FOR F-122 (subwoofer for F-122),<br>SR-S4 SINGLE (SR-S4 driven by a single amplifier),<br>HX-5_E, HX-5_E LOCUT (HX-5_E for low-cut), FB-120 |
| EQ | ON, OFF |
| EQ Band Number | 1 to 10 |
| Gain | –12 dB to +12 dB (default setting for 0 dB) 1 dB step |
| Q | 0.3, 0.5, 0.7, 1, 1.5, 2, 3, 5 |
| Center Frequency | 20, 25, 31.5, 40, 50, 63, 80, 100, 125, 160, 200, 250, 315, 400, 500, 630, 800, 1 k, 1.25 k, 1.6 k, 2 k, 2.5 k, 3.15 k, 4 k, 5 k, 6.3 k, 8 k, 10 k, 12.5 k, 16 k, 20 k |
| HPF | OFF, 20, 25, 31.5, 40, 50, 63, 80, 100, 125, 160, 200, 250, 315, 400 Hz |
| LPF | OFF, 4 k, 5 k, 6.3 k, 8 k, 10 k, 12.5 k, 16 k, 20 kHz |
| Compressor | OFF, 0, 1, 2, 3, 4, 5 |

**[Speaker EQ settings]**

| | ALL FLAT (Default) | | |
|---|---|---|---|
| | GAIN (dB) | FREQ (Hz) | Q |
| EQ 1 | 0 | 31.5 | 1.5 |
| EQ 2 | 0 | 63 | 1.5 |
| EQ 3 | 0 | 125 | 1.5 |
| EQ 4 | 0 | 250 | 1.5 |
| EQ 5 | 0 | 500 | 1.5 |
| EQ 6 | 0 | 1 k | 1.5 |
| EQ 7 | 0 | 2 k | 1.5 |
| EQ 8 | 0 | 5 k | 1.5 |
| EQ 9 | 0 | 8 k | 1.5 |
| EQ 10 | 0 | 16 k | 1.5 |

| | F-122 | | | F-122SUBWFER*1 | | |
|---|---|---|---|---|---|---|
| | GAIN (dB) | FREQ (Hz) | Q | GAIN (dB) | FREQ (Hz) | Q |
| EQ 1 | Settable EQ bands in the EQ setting screen | | | Settable EQ bands in the EQ setting screen | | |
| EQ 2 | | | | | | |
| EQ 3 | | | | | | |
| EQ 4 (HPF) | —— | 37.5 | 0.5 | —— | 45 | 0.5 |
| EQ 5 (HPF) | —— | 37.5 | 0.7 | —— | 45 | 0.7 |
| EQ 6 | +11.5 | 85 | 2.871 | +6.5 | 80 | 1.414 |
| EQ 7 | –2.5 | 212 | 0.667 | –4.5 | 180 | 0.667 |
| EQ 8 | –8 | 900 | 2.871 | –8 | 900 | 2.871 |
| EQ 9 | +8 | 10 k | 0.267 | +8 | 11.2 k | 0.267 |
| EQ 10 (LPF) | —— | 20 k | 0.7 | —— | 20 k | 0.7 |

*1 F-122 with a subwoofer

| | H-1 | | | H-1SUBWFER*2 | | |
|---|---|---|---|---|---|---|
| | GAIN (dB) | FREQ (Hz) | Q | GAIN (dB) | FREQ (Hz) | Q |
| EQ 1 | Settable EQ bands in the EQ setting screen | | | Settable EQ bands in the EQ setting screen | | |
| EQ 2 | | | | | | |
| EQ 3 | | | | | | |
| EQ 4 | | | | | | |
| EQ 5 | | | | | | |
| EQ 6 (HPF) | —— | 118 | 0.707 | —— | 118 | 0.707 |
| EQ 7 | +10 | 125 | 1.8 | +4 | 125 | 1.8 |
| EQ 8 | –6.5 | 220 | 1.414 | –6.5 | 220 | 1.414 |
| EQ 9 | +1.5 | 5 k | 0.305 | +1.5 | 5 k | 0.305 |
| EQ 10 (LPF) | —— | 15.8 k | 0.5 | —— | 15.8 k | 0.5 |

*2 H-1 with a subwoofer

| | H-2 | | | H-2SUBWFER*3 | | |
|---|---|---|---|---|---|---|
| | GAIN (dB) | FREQ (Hz) | Q | GAIN (dB) | FREQ (Hz) | Q |
| EQ 1 | Settable EQ bands in the EQ setting screen | | | Settable EQ bands in the EQ setting screen | | |
| EQ 2 | | | | | | |
| EQ 3 | | | | | | |
| EQ 4 | | | | | | |
| EQ 5 | | | | | | |
| EQ 6 (HPF) | —— | 63 | 0.707 | —— | 63 | 0.707 |
| EQ 7 | +10 | 100 | 1.871 | +2.5 | 100 | 1.871 |
| EQ 8 | –5 | 200 | 1.414 | –5 | 200 | 1.414 |
| EQ 9 | +1.5 | 5 k | 0.305 | +1.5 | 5 k | 0.305 |
| EQ 10 (LPF) | —— | 15.8 k | 0.5 | —— | 15.8 k | 0.5 |

*3 H-2 with a subwoofer

| | H-3 | | | H-3SUBWFER*4 | | |
|---|---|---|---|---|---|---|
| | GAIN (dB) | FREQ (Hz) | Q | GAIN (dB) | FREQ (Hz) | Q |
| EQ 1 | Settable EQ bands in the EQ setting screen | | | Settable EQ bands in the EQ setting screen | | |
| EQ 2 | | | | | | |
| EQ 3 | | | | | | |
| EQ 4 | | | | | | |
| EQ 5 | | | | | | |
| EQ 6 (HPF) | —— | 63 | 0.707 | —— | 63 | 0.707 |
| EQ 7 | +9 | 100 | 2.871 | +5 | 100 | 2.871 |
| EQ 8 | –8 | 220 | 2.871 | –8 | 220 | 2.871 |
| EQ 9 | +5 | 500 | 2.871 | +5 | 500 | 2.871 |
| EQ 10 | +1.5 | 5 k | 0.305 | +1.5 | 5 k | 0.305 |

*4 H-3 with a subwoofer

| | HB-1 | | |
|---|---|---|---|
| | GAIN (dB) | FREQ (Hz) | Q |
| EQ 1 | Settable EQ bands in the EQ setting screen | | |
| EQ 2 | | | |
| EQ 3 | | | |
| EQ 4 | | | |
| EQ 5 | | | |
| EQ 6 | | | |
| EQ 7 | | | |
| EQ 8 | | | |
| EQ 9 (HPF) | —— | 40 | 1 |
| EQ 10 (LPF) | —— | 100 | 1 |

| | FB-100 | | |
|---|---|---|---|
| | GAIN (dB) | FREQ (Hz) | Q |
| EQ 1 | Settable EQ bands in the EQ setting screen | | |
| EQ 2 | | | |
| EQ 3 | | | |
| EQ 4 | | | |
| EQ 5 | | | |
| EQ 6 | | | |
| EQ 7 | | | |
| EQ 8 | | | |
| EQ 9 (HPF) | —— | 40 | 1 |
| EQ 10 (LPF) | —— | 100 | 1 |

| | SW FOR F-122*5 | | |
|---|---|---|---|
| | GAIN (dB) | FREQ (Hz) | Q |
| EQ 1 | Settable EQ bands in the EQ setting screen | | |
| EQ 2 | | | |
| EQ 3 | | | |
| EQ 4 | | | |
| EQ 5 | | | |
| EQ 6 | | | |
| EQ 7 | | | |
| EQ 8 | | | |
| EQ 9 (LPF) | —— | 100 | 0.5 |
| EQ 10 | +2.5 | 112 | 0.667 |

*5 Subwoofer for F-122

| | SR-S4 SINGLE*6 | | |
|---|---|---|---|
| | GAIN (dB) | FREQ (Hz) | Q |
| EQ 1 | Settable EQ bands in the EQ setting screen | | |
| EQ 2 | | | |
| EQ 3 | | | |
| EQ 4 | | | |
| EQ 5 | | | |
| EQ 6 | | | |
| EQ 7 | | | |
| EQ 8 | | | |
| EQ 9 (HPF) | —— | 60 | 1.226 |
| EQ 10 | +5 | 16 k | 1.414 |

*6 SR-S4 driven by a single amplifier

| | HX-5_E*7 | | |
|---|---|---|---|
| | GAIN (dB) | FREQ (Hz) | Q |
| EQ 1 | Settable EQ bands in the EQ setting screen | | |
| EQ 2 | | | |
| EQ 3 | | | |
| EQ 4 | | | |
| EQ 5 | | | |
| EQ 6 (HPF) | —— | 60 | 2.053 |
| EQ 7 | +2 | 65 | 1.414 |
| EQ 8 | –3 | 800 | 0.7 |
| EQ 9 | –4 | 2.5 k | 2.997 |
| EQ 10 | +5 | 5 k | 0.305 |

*7 HX-5 Series

| | HX-5_E LOCUT*8 | | |
|---|---|---|---|
| | GAIN (dB) | FREQ (Hz) | Q |
| EQ 1 | Settable EQ bands in the EQ setting screen | | |
| EQ 2 | | | |
| EQ 3 | | | |
| EQ 4 | | | |
| EQ 5 | | | |
| EQ 6 | | | |
| EQ 7 (HPF) | —— | 90 | 1.30656 |
| EQ 8 | –3 | 800 | 0.7 |
| EQ 9 | –4 | 2.5 k | 2.997 |
| EQ 10 | +5 | 5 k | 0.305 |

*8 HX-5 Series for low-cut use

| | FB-120*9 | | |
|---|---|---|---|
| | GAIN (dB) | FREQ (Hz) | Q |
| EQ 1 | Settable EQ bands in the EQ setting screen | | |
| EQ 2 | | | |
| EQ 3 | | | |
| EQ 4 | | | |
| EQ 5 | | | |
| EQ 6 | | | |
| EQ 7 | | | |
| EQ 8 | | | |
| EQ 9 (HPF) | —— | 40 | 2.053 |
| EQ 10 (LPF) | —— | 100 | 1 |

*9 FB-120 Series

# 21. SPECIFICATIONS

## 21.1. M-9000

| | |
|---|---|
| Power Source | 120 V AC, 60 Hz |
| Power Consumption | 40 W |
| Audio Input | Max. 8 channels, modular construction (modules optional) |
| Audio Output | Preamplifier output 1, 2: 0 dB*1, 600 Ω, balanced, removable terminal block (3 pins) |
| Module Slot | Analog input (slot 1 – 8): –10 dB*1, 10 kΩ, unbalanced<br>Digital input (slot 1 – 4): 24 bit/48 kHz<br>MIX output (slot 1 – 8): –14 dB*1, 330 Ω (CH1 prefader output), unbalanced<br>Digital output (slot 5 – 7): 24 bit/48 kHz<br>Power supply (slot 1 – 8): +24 V, –24 V, +6 V DC |
| Digital Audio Signal Reference Level | –20 dB FS |
| Frequency Response | 20 – 20,000 Hz, +1, −3 dB |
| Total Harmonic Distortion | 0.008% (at 22 kHz LPF, 1 kHz, +10 dB*1 output) |
| S/N Ratio | At Input short, 20 – 20,000 Hz, ALL FLAT or OFF setting<br>Output volume min.: 90 dB<br>Output volume max.: 61 dB (input 1 volume: 0 dB, other inputs: OFF) |
| Cross Talk | Over 64 dB (at 20 kHz) |
| Tone Control | Bass: ±12 dB (at 100 Hz), Treble: ±12 dB (at 10 kHz) |
| Parametric Equalizer | 10 bands, Frequency: 20 – 20,000 Hz, 31 steps, Various range: ±12 dB, Q: 0.3 – 5 |
| Speaker Equalizer | 15 (compatible with TOA speakers only) |
| High-pass Filter | –12 dB/oct, Variable frequency range: 20 – 400 Hz, 14 steps |
| Low-pass Filter | –12 dB/oct, Variable frequency range: 4,000 – 20,000 Hz, 8 steps |
| Compressor | Depth: 1 – 5 |
| Delay | 0 – 42 ms (1 ms steps), maximum 42 ms (CH1 + CH2), mixer mode only |
| Scene/Event Memory | 32 |
| Operation Mode | Matrix mode/Mixer mode (selector switch) |
| Auxiliary Function | Key lock function |
| Control Input/Output | RS-232C*2, D-sub connector (9P, female)<br>Control input: 4 inputs, no-voltage make contact input, open voltage: 3.3 V DC, short-circuit current: under 1 mA, removable terminal block<br>Control output: 4 outputs, open collector output, withstand voltage: 27 V DC, control current: 50 mA, removable terminal block<br>Remote volume: 2 channels, connect a 10 kΩ/linear taper variable resister or input the DC voltage of 0 to +10 V, removable terminal block |
| Operating Temperature | –10 to +40°C |
| Operating Humidity | 35% to 80% RH (no condensation) |
| Finish | Panel: Aluminum, hair-line, black<br>Case: Surface-treated steel plate, black, paint |
| Dimensions | 420 (w) x 107.6 (h) x 353 (d) mm |
| Weight | 6 kg |

*1 0 dB = 1 V

*2 Allowing it to be controlled by a control system such as AMX and Crestron through RS-232C port.

**Notes**

- The design and specifications are subject to change without notice for improvement.
- AMX is a trademark of AMX Corporation.
- Crestron is a trademark of Crestron Electronics, Inc.

**• Accessories**

Power cord (2 m) ..... 1
Rack mounting bracket ..... 2
Rack mounting screw (M4 x 16) ..... 4
Blank panel ..... 7
Blank panel mounting screw (M3 x 8) ..... 14
Removable terminal plug (3 pins) ..... 2
Removable terminal plug (14 pins) ..... 1
CD-ROM ..... 1
Start guide ..... 1

## 21.2. A-9060DH, A-9120DH

| Model No. | A-9060DH | A-9120DH |
|---|---|---|
| Power Source | 120 V AC, 60 Hz | |
| Power Consumption | 150 W | 250 W |
| Audio Input | Max. 8 channels, modular construction (modules optional)<br>Power amplifier input 1, 2: 0 dB*1, 10 kΩ, RCA pin jack | |
| Audio Output | | |
| Preamplifier Output 1, 2 | 0 dB*1, 300 Ω, unbalanced, RCA pin jack | |
| Speaker Output 1, 2 | 60 W, 83 Ω x 2, BLT output, removable terminal block (4 pins) | 120 W, 41 Ω x 2, BLT output, removable terminal block (4 pins) |
| Module Slot | Analog input (slot 1 – 8): –10 dB*1, 10 kΩ, unbalanced<br>Digital input (slot 1 – 4): 24 bit/48 kHz<br>MIX output (slot 1 – 8): –14 dB*1, 330 Ω (CH1 prefader output), unbalanced<br>Digital output (slot 5 – 7): 24 bit/48 kHz<br>Power supply (slot 1 – 8): +24 V, –24 V, +6 V DC | |
| Digital Audio Signal Reference Level | –20 dB FS | |
| Power Bandwidth | 20 – 20,000 Hz, 0.008% THD | |
| Frequency Response | Power amplifier section: 20 – 20,000 Hz, +0, –1 dB<br>Analog input module to speaker output: 20 – 20,000 Hz, +1, –3 dB | |
| Total Harmonic Distortion | Power amplifier section: 0.0008%<br>(22 kHz LPF, 1 kHz, rated power)<br>Analog input module to speaker output: 0.008%<br>(22 kHz LPF, 1 kHz, rated power) | |
| S/N Ratio | At Input short, 20 – 20,000 Hz, ALL FLAT or OFF setting<br>Output volume min.: 90 dB (preamplifier output)<br>Output volume max.: 61 dB (preamplifier output, input 1 volume: 0 dB, other inputs: OFF)<br>Power amplifier section: 110 dB | |
| Cross Talk | Over 64 dB (at 20 kHz) | |
| Tone Control | Bass: ±12 dB (at 100 Hz)<br>Treble: ±12 dB (at 10 kHz) | |
| Parametric Equalizer | 10 bands, Frequency: 20 – 20,000 Hz, 31 steps, Various range: ±12 dB, Q: 0.3 – 5 | |
| Speaker Equalizer | 15 (compatible with TOA speakers only) | |
| High-pass Filter | –12 dB/oct, Variable frequency range: 20 – 400 Hz, 14 steps | |
| Low-pass Filter | –12 dB/oct, Variable frequency range: 4,000 – 20,000 Hz, 8 steps | |
| Compressor | Depth: 1 – 5 | |
| Delay | 0 – 42 ms (1 ms steps), maximum 42 ms (CH1 + CH2), mixer mode only | |
| Scene/Event Memory | 32 | |
| Operation Mode | Matrix mode/Mixer mode (selector switch) | |
| Auxiliary Function | Key lock function | |
| Control Input/Output | RS-232C*2, D-sub connector (9P, female)<br>Control input: 4 inputs, no-voltage make contact input, open voltage: 3.3 V DC, short-circuit current: under 1 mA, removable terminal block<br>Control output: 4 outputs, open collector output, withstand voltage: 27 V DC, control current: 50 mA, removable terminal block<br>Remote volume: 2 channels, connect a 10 kΩ/linear taper variable resister or input the DC voltage of 0 to +10 V, removable terminal block | |
| Operating Temperature | –10 to +40°C | |
| Operating Humidity | 35% to 80% RH (no condensation) | |
| Finish | Panel: Aluminum, hair-line, black<br>Case: Surface-treated steel plate, black, paint | |
| Dimensions | 420 (w) x 107.6 (h) x 395 (d) mm | |
| Weight | 9 kg | 11 kg |

*1 0 dB = 1 V

*2 Allowing it to be controlled by a control system such as AMX and Crestron through RS-232C port.

**Notes**

- The design and specifications are subject to change without notice for improvement.
- AMX is a trademark of AMX Corporation.
- Crestron is a trademark of Crestron Electronics, Inc.

**• Accessories**

Power cord (2 m) ..... 1
Rack mounting bracket ..... 2
Rack mounting screw (M4 x 16) ..... 4
Blank panel ..... 7
Blank panel mounting screw (M3 x 8) ..... 14
Removable terminal plug (4 pins) ..... 1
Removable terminal plug (14 pins) ..... 1
CD-ROM ..... 1
Start guide ..... 1

## 21.3. Optional Modules

### 21.3.1. D-001T

| | |
|---|---|
| Power Source | +24 V DC, –24 V DC, +6 V DC |
| Current Consumption | 20 mA (at +24 V DC), 20 mA (at –24 V DC), 60 mA (at +6 V DC) |
| Input | 2 channels,<br>3 kΩ (when the phantom power is ON) / 10 kΩ (phantom power is OFF),<br>electronically-balanced, removable terminal block (3 pins) |
| Input Sensitivity | –60, –54, –48, –42, –36, –30, –24, –18, –10 dB* (selectable) |
| Frequency Response | 20 – 20,000 Hz +1, –3 dB |
| Total Harmonic Distortion + N | 0.008% (at 1 kHz, 20 – 20,000 Hz BPF, Input sensitivity: –10 dB) |
| Input Equivalent Noise | Under –112 dB<br>(at 20 – 20,000 Hz BPF, Input short, Input sensitivity: –60 dB) |
| S/N Ratio | Over 73 dB<br>(at 20 – 20,000 Hz BPF, Input short, Input sensitivity: –10 dB) |
| Cross Talk | Over 75 dB (at 20 kHz, Input sensitivity: –10 dB) |
| CMRR | Over 62 dB (at 1 kHz, Input sensitivity: –60 dB) |
| A/D Converter | 24 bit ΔΣADC |
| Sampling Frequency | 48 kHz |
| Tone Control | Bass: ±12 dB (at 100 Hz)<br>Treble: ±12 dB (at 10 kHz) |
| Parametric Equalizer | 10 bands, Frequency: 20 – 20,000 Hz, 31 steps, Variable range: ±12 dB,<br>Q: 0.3 – 5 |
| High-pass Filter | –12 dB/oct, Variable frequency range: 20 – 400 Hz, 14 steps |
| Low-pass Filter | –12 dB/oct, Variable frequency range: 4,000 – 20,000 Hz, 8 steps |
| Compressor | Depth: 1 – 5 |
| Phantom Power | +24 V DC |
| Operating Temperature | –10 to +40°C |
| Finish | Panel: Aluminum, hair-line |
| Dimensions | 35 (w) x 78 (h) x 91.5 (d) mm |
| Weight | 82 g |

* 0 dB = 1 V

**Note:** The design and specifications are subject to change without notice for improvement.

**• Accessories**

Removable terminal plug (3 pins) ..... 2
Module mounting screw ..... 2

### 21.3.2. T-001T

| | |
|---|---|
| Power Source | +24 V DC, –24 V DC, +6 V DC |
| Current Consumption | 35 mA (at +24 V DC), 35 mA (at –24 V DC), 60 mA (at +6 V DC) |
| Output | 2 channels, max. +20 dB* (at 10 kΩ load), 600 Ω, electronically-balanced, removable terminal block (3 pins) |
| Frequency Response | 20 – 20,000 Hz +1, –3 dB |
| Total Harmonic Distortion + N | 0.005% (at 1 kHz, 20 – 20,000 Hz BPF, 5 V output, 10 kΩ load) |
| S/N Ratio | Over 73 dB (at 20 – 20,000 Hz BPF) |
| Residual Noise | Under –91 dB (at 20 – 20,000 Hz BPF, VOL: –70 dB) |
| Cross Talk | Over 87 dB (at 20 kHz) |
| D/A Converter | 24 bit ΔΣDAC |
| Sampling Frequency | 48 kHz |
| Tone Control | Bass: ±12 dB (at 100 Hz)<br>Treble: ±12 dB (at 10 kHz) |
| Parametric Equalizer | 10 bands, Frequency: 20 – 20,000 Hz, 31 steps, Variable range: ±12 dB, Q: 0.3 – 5 |
| Speaker Equalizer | 15 (compatible with TOA speakers only) |
| High-pass Filter | –12 dB/oct, Variable frequency range: 20 – 400 Hz, 14 steps |
| Low-pass Filter | –12 dB/oct, Variable frequency range: 4,000 – 20,000 Hz, 8 steps |
| Compressor | Depth: 1 – 5 |
| Delay | 0 – 42 ms (1 ms step), maximum 42 ms (CH1 + CH2), mixer mode only |
| Operating Temperature | –10 to +40°C |
| Finish | Panel: Aluminum, hair-line |
| Dimensions | 35 (w) x 78 (h) x 91.5 (d) mm |
| Weight | 82 g |

* 0 dB = 1 V

**Note:** The design and specifications are subject to change without notice for improvement.

**• Accessories**

Removable terminal plug (3 pins) ..... 2
Module mounting screw ..... 2

### 21.3.3. C-001T

| | |
|---|---|
| Power Source | 6 V DC |
| Current Consumption | 15 mA |
| Control Input | 8 channels, open voltage: 3.3 V DC, short-circuit: under 1 mA, removable terminal block (9 pins) |
| Control Output | 8 channels, open collector output, withstand voltage: 27 V DC, control current: max. 50 mA, removable terminal block (9 pins) |
| Operating Temperature | –10 to +40°C |
| Finish | Panel: Aluminum, hair-line |
| Dimensions | 35 (w) x 78 (h) x 91.5 (d) mm |
| Weight | 62 g |

**Note:** The design and specifications are subject to change without notice for improvement.

**• Accessories**

Removable terminal plug (9 pins) ..... 2
Module mounting screw ..... 2

### 21.3.4. ZP-001T

| | |
|---|---|
| Power Source | +24 V DC, +6 V DC |
| Current Consumption | 38 mA (at +24 V DC), 18 mA (at +6 V DC) |
| Number of Lines | 1 line |
| Type of Selectable Signal | DTMF signal |
| Signaling System | Loop-Start (or Ground-Start, selectable) |
| TEL Line | 0 dB, 600 Ω, balanced, RJ-11 connector/removable terminal block (4 pins) |
| Control Input | 1 channel, no-voltage make contact, open voltage: 5 V DC, short-circuit: 0.5 mA, removable terminal block (4 pins) |
| Control Output | 4 channels, open collector output (isolated), withstand voltage: 35 V DC, control current: max. 50 mA, removable terminal block (4 pins) |
| Operating Temperature | –10 to +40°C |
| Finish | Panel: Aluminum, hair-line |
| Dimensions | 35 (w) x 78 (h) x 91.5 (d) mm |
| Weight | 153 g |

**Note:** The design and specifications are subject to change without notice for improvement.

**• Accessories**

Removable terminal plug (4 pins) ..... 3
Module mounting screw ..... 2